

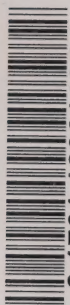
# OCCUPATIONAL SAFETY PROGRAMMES— ARE THEY WORTH IT?

(A SUBJECTIVE STUDY OF OCCUPATIONAL SAFETY ENFORCEMENT  
AND RELATED MATTERS IN SIX PROVINCES AND SIX STATES)

DON F. JONES

LABOUR SAFETY COUNCIL OF ONTARIO  
ONTARIO MINISTRY OF LABOUR

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## FOREWORD

When we believe that a goal is desirable, we tend to assume that actions intended to reach it are both necessary and beneficial. Unfortunately, the action is not always productive and the goal may be neither attainable nor as desirable as we had thought.

In this report, the author attempts to look at some of the actions taken and results obtained in our efforts to minimize industrial injuries in a sampling of premises throughout Canada and the United States. Although primarily intended for study by the Labour Safety Council of Ontario, it is being made available to interested persons as part of Ontario's programme to encourage re-examination of the principles upon which our safety programmes are based.



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OCCUPATIONAL SAFETY PROGRAMMES - ARE THEY WORTH IT?  
(A Subjective Study of Occupational Safety Enforcement  
and Related Matters in Six Provinces and Six States)

A report to the Labour Safety Council of Ontario  
by Don F. Jones, Executive Director.

- Notes:
1. Views expressed in this report are those of the writer.
  2. For the purposes of this report, an Occupational Safety Programme is any planned activity designed or intended to reduce industrial accidents and through them, industrial injuries, where such programme is administered or sponsored by a government agency.
  3. This report attempts to concentrate on the effect of enforcement by a government agency. Discussion or organizational and legislative changes that might facilitate a fully co-ordinated programme may be found in previous reports entitled, "The Future of Safety in Ontario" and "Accident Prevention in Ontario" dated 1966 and 1969 respectively.

## OCCUPATIONAL SAFETY PROGRAMMES - ARE THEY WORTH IT?

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OCCUPATIONAL SAFETY PROGRAMMES - ARE THEY WORTH IT?

Abstract

Traditional enforcement approaches to industrial accident prevention assume that the company whose employees receive the highest compensation payments will be the one with the greatest hazards, the least interest in accident prevention and the greatest number of lost time injuries.

Starting with the foregoing assumption, it was decided that a subjective measure of this would be obtained by examining the lost time injuries in a sampling of companies. Companies were selected in six provinces and six states having different approaches, legislation and administration. It was hoped that some aspect of a programme administered by one of these states or provinces would show a consistent relationship to the incidence of injuries to workers.

The results indicate that although some conventional beliefs are upheld by the observations, others may be based more on wishful thinking than on fact.



## I

Reason for the Report

Man operates within a hierarchy of needs. The first priority in this hierarchy is survival. Although it is nice to believe that each life is priceless, we know that in some situations an individual must be sacrificed to ensure survival of the species. Whether such sacrifice is necessary or whether supposed heroism is commendable in the pursuit of lesser needs is a matter of opinion. Those human beings who work to produce, maintain and distribute the products necessary for the survival of civilization were once considered to be expendable. It was accepted that some must die or be maimed to produce the food, clothing and shelter we require.

This thinking has now given way to a recognition that we can satisfy the survival needs of the individual and the nation simultaneously. In addition we can provide for material things to fulfil more exotic wants of the people without undue exposure to injury. The excellent results of safety programmes in some of our largest and most stable industries would tend to validate this belief.

In spite of this enlightened attitude towards individual needs and aspirations, the reported national injury frequency in Canada and the United States has shown little if any improvement in the past ten years. Some reports show the lost time injury rate to be climbing in spite of increased emphasis on education and on enforcement of modern safety legislation.

In these circumstances and considering our avowed goal of fulfilling the combined needs of the individual and the nation, there appears to be reason to examine our existing programmes to ensure they do not contain components incompatible with modern attitudes, abilities and technology.

Purpose

Recognizing that the apparent failure to achieve further injury reductions may be the result of significant weakness in our programmes, a change in the attitudes of people, or a problem associated with our method of collecting and coding statistical data, it appeared that a useful purpose would be served by visiting industries in an attempt to uncover significant variables. Due to the continued emphasis on government enforcement of safety rules, it was felt that an analysis of lost time injuries might show the potential impact of law enforcement on these injuries.

The purpose of the study was to locate apparent weaknesses and strengths in our existing programmes and to suggest potentially useful modifications worthy of further examination, test and possible implementation.

Assumptions

It is dangerous to make assumptions as to the outcome of a study since it tends to result in selection of only those factors which prove the author's predetermined prejudices. On the other hand, assumptions must be made as to the matters that are worthy of investigation if the project is to be undertaken in a rational manner. To make an assumption respecting the outcome may also be of benefit if an effort is made to seek factors which contradict the assumption.

Since the proposed study was to cover the effectiveness of programmes in many jurisdictions and required personal attention, it was necessary to facilitate the work by making some assumptions and selecting a sample that would (hopefully) test its validity.

Initial assumptions were as follows:

1. The number of lost time injuries and the monies paid in compensation benefits should bear some relation to the hazards in the premises.
2. Prevention of lost time injuries should have some relationship to the efforts expended by government in its provision and enforcement of safety legislation and to the provision of safety education programmes.
3. Where injuries occurred, it is likely that a law was disobeyed and that improved law enforcement would result in a significant reduction in lost time injuries.
4. If lost time injuries were reported on a state or provincial basis, the rates would indicate the relative effectiveness of the programme in that state or province thereby permitting selection of jurisdictions in which a more detailed study could be undertaken to find the reasons for the differences.

The Survey

To compare the results of different approaches to government involvement in occupational safety programmes, states and provinces were selected having varying geographical and climate factors, and different levels of emphasis on enforcement, education and consultation. They are listed below with a brief explanation for their selection.

- |                  |   |
|------------------|---|
| Nova Scotia      | - Maritime - eastern - not heavily industrialized - government enforcement - compensation board education.  |
| Quebec           | - Bilingual - moderately industrialized - government enforcement - employer sponsored education.  |
| Ontario          | - Source of the study - central - highly industrialized - government enforcement - education by compensation financed accident prevention associations.   |
| Manitoba         | - Northern - primarily flat rural - not heavily industrialized - education and enforcement by Workmen's Compensation Board.   |
| Alberta          | - Northern - varying topography - not heavily industrialized - education and enforcement by Workmen's Compensation Board.   |
| British Columbia | - Maritime and mountainous - western - moderately industrialized - education and enforcement by Workmen's Compensation Board.   |
| California       | - Southern Maritime - mixed terrain - highly industrialized - comprehensive regulations - enforcement and education by Department of Industrial Relations - workmen's compensation by private carriers. |
| Arizona          | - Hot, southern, arid climate - education by compensation insurers - government enforcement - considerable Mexican element in some industries - negligible government enforcement until recently.       |

- Wisconsin - Mixed economy - leader in statistical studies of industrial injuries.
- Minnesota - Midwestern, northern - recreationally motivated.
- Michigan - Highly industrialized - enforcement and education by Department of Labor.
- Ohio - Highly industrialized - concentration on education and consultation through Division of Safety and Hygiene of Industrial Commission.

To ensure as broad a coverage as possible, it was decided to visit companies of a size that would permit two visits per day. As a result, an attempt was made to select companies having between 50 and 200 employees. This permitted a discussion of lost time injuries for a 12 month period and a tour of the premises within the allotted time. Some companies visited fell outside these limits, but their presence in the survey was found to be beneficial in illustrating that larger size does not ensure real success in an accident prevention programme.

As a basis for comparison, three companies were selected from each of the following industry groups in Ontario: metal fabrication, woodworking, foundries, chemical, textile, printing, electrical, and food. These companies were selected from records of the Industrial Accident Prevention Association to be representative of low, medium and high industrial injury experience respectively.

Each of the companies was visited with a representative of the Industrial Accident Prevention Association. Senior company representatives were contacted. When questions were raised that required personal contact with an employee (for clarification), this was arranged where practicable. All visits consisted of an explanation of the purpose of the visit, assurance that information used in the report would be anonymous, and that contraventions of legislation disclosed to assist in our findings would not be reported to the enforcement agency. The company's accident



reports were then examined and a subjective decision made as to whether the injury was the result of a violation of a rule (company or government) and whether an inspector visiting the premises the preceding week would have resulted in action taken to prevent the injury. These tentative opinions were reviewed against the company's copy of inspection reports and during the plant tour.

Since the administration of the enforcement agency felt that visits with industrial safety officers would be inconvenient until a reorganization of districts was completed, a similar survey with these officers was postponed until the last phase of the study\*. It was decided that this would serve as a useful check on the tentative findings of the report.

Armed with the results of the first 24 visits in Ontario, arrangements were made to visit industries in other states and provinces selected from the general industry classes already visited. All visits were arranged through the responsible provincial and state officials and one of their field officers was present in almost every case to assist in the survey. Without the co-operation and encouragement of these officials as well as personnel of the companies visited, this report would not have been possible.

\*Note: A small sampling in the Thunder Bay area in May of 1972 was fully consistent with results of the earlier visits in Southern Ontario and elsewhere. In addition, three companies with the highest injury frequency were revisited early in 1973. The results of these visits also reinforced the earlier findings.

Comparative Observations

The most disconcerting observation emerged early in the survey and was consistently reinforced throughout the many companies in the states and provinces visited. The message came through "loud and clear" that our observations and original assumptions were, on the surface at least, incompatible. It became necessary to look for new hypotheses and continue to seek the reasons for failure of what had seemed to be a logical outgrowth of normal accident prevention beliefs.

Sample Comparisons

Some of the anomalies resulting in our confusion were as follows:

1. Two companies in the same town had a similar number and type of injuries, were in the same business, had roughly the same number of employees, but one had a high lost time injury rate and the other had none.
2. A company in the Toronto area had so many hazards, contraventions of Ontario's legislation, and such poor housekeeping that I told them it was one of the worst I had ever visited and that I would have instituted court proceedings against them if I had visited the premises in the capacity of an inspector, but the regular employees received no more injuries than those of similar companies with improved guarding, good housekeeping, etc.
3. A company in the Montreal area filed  $1\frac{1}{2}$  compensation claims for each employee in 1971 and  $1/3$  of the work force were reported to have suffered an injury sufficiently severe that they were unable to report for the next shift, but the housekeeping, guarding and provision of good equipment and tools could not be faulted.
4. An employee of a company in Michigan complained of a backache in July and received compensation until December 30 when he returned to work, but medical diagnosis of any injury or specific work related cause is reported to be negative.

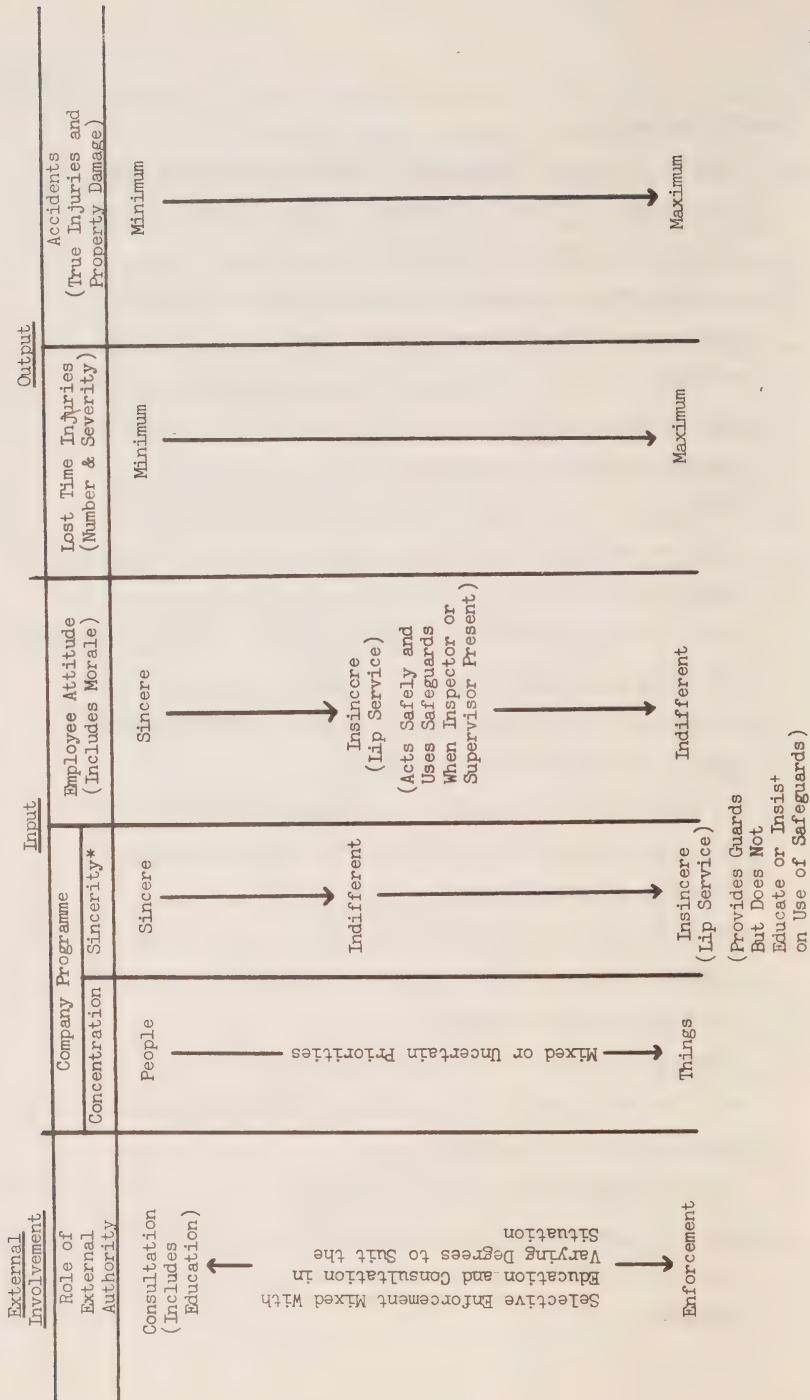
5. A company in British Columbia had few lost time injuries, but none of the lost time injuries were for less than a week.
6. A company in California (not adhering to state injury recording standards) had no lost time injuries in 1971, but an employee lost a finger.
7. A company in California had a high lost time injury frequency, but the majority of these injuries were of a type that did not appear on reports in other states and provinces and would not likely have been considered compensable elsewhere.
8. A company near Toronto had a comprehensive programme of industrial relations and safety including machine guarding beyond that which would be required under the law and had very few injuries, none of which would be considered serious by most people, but their compensation experience was such that they expected to be considered for an increased compensation assessment.
9. Two companies in Toronto were in the same business and both had poor records until recently. One was so bad that it has received increased compensation assessments for the past five years whereas the other is now considered to be good. The good company has good housekeeping, improved guarding and pays better wages, but the difference between the two companies is more the result of the days absent by employees than the difference in number and type of injuries.
10. A company in British Columbia would like more frequent inspections than currently provided by the Workmen's Compensation Board, but the manager's motivation is related to an admitted desire to shift criticism away from himself when accidents occur.

ALTHOUGH THESE EXAMPLES APPEAR CONTRADICTIONARY, A DEEPER EXAMINATION RESULTS IN A PATTERN EMERGING WHICH EMPHASIZES THE NEED FOR A MORE SELECTIVE PROGRAMME THAN CURRENTLY EXISTING IN ANY OF THE JURISDICTIONS VISITED.

### Overall Observations

1. There is no apparent relationship between the money and time spent by government on current programmes to reduce industrial injuries and the true incidence of industrial injuries.
2. If management is genuinely interested in safety, government intervention is less necessary, enforcement becomes redundant, and education is merely a method of assisting management on matters where consultation of a person with broader or more specialized experience can help. (see Figure 1)
3. Neither education nor enforcement (except as noted below) are effective where management is not genuinely interested in safety.
4. Inspection and the law enforcement is most effective on so called unsafe conditions which are not subject to change between inspections.
5. Inspection and law enforcement is of little effect on elimination of unsafe acts and is questionable for unsafe conditions which are subject to change between inspections.
6. Current statistics are of such low accuracy and consistency that they cannot be used to compare programmes or results between industries or jurisdictions.
7. Compensation costs for currently reported lost time injuries are not a reliable measure of the frequency of industrial injuries (with some exceptions such as death).
8. Compensation costs for currently reported lost time injuries are not a reliable measure of the severity of industrial injuries (with some exceptions such a death).
9. The relationship between compensation paid and the severity of injuries becomes increasingly vague as the severity is reduced from death, through amputations and broken bones to muscular strains and lacerations.

Figure 1  
Occupational Safety Effectiveness





10. In examining the accidents in some companies, it was curious to note that even though all lost time injuries were in the factory area, the type of injury could just as easily have happened to an office employee in the office. Possible differences include:
- (a) salary and security vs. wages and insecurity (more layoffs);
  - (b) an office employee is more adaptable to useful office jobs than is a factory employee (with scratched fingers, bursitis and related minor injuries).

Conclusions

Reduction of industrial accidents and injuries can only be achieved through enlightened management in co-operation with the work force applying its skills and genuine interest towards solving the material and human problems existing in their operations. Safety consultation and education can be most effective and useful in helping enlightened management on matters beyond their expertise and in making valid and believable information available to the public.

Enforcement is most effective in reminding people that freedom must be accompanied by responsibility. Through strict enforcement of reasonable standards, it may make the alternative of consultation, education and self-discipline attractive to disinterested or callous employers.

Although the effect of Workmen's Compensation benefits on absenteeism is beyond the scope of this survey, the possibility of such a relationship appeared so frequently that it cannot be ignored. Due to the complexity of the subject, and the existence of a Task Force currently examining the administration of the Workmen's Compensation Board of Ontario, recommendations on the subject are not included in this report.

### Summary of Recommendations

Implementation of the following recommendations should help reduce the number of industrial injuries and related loss of production by encouraging management towards sincere involvement in a meaningful accident prevention programme. Such programmes exist in varying degrees in most states and provinces, but their effectiveness is weakened by the presence of conflicting parts of the programme (e.g. enforcement and education working at cross purposes), and the lack of means to compare records with other jurisdictions. Nevertheless, many companies have achieved outstanding results regardless of the official programme (or lack of it) under which they must operate.

#### Legislation

1. Revise all safety legislation as may be necessary to:-
  - (a) be consistent;
  - (b) group common problems;
  - (c) include only essential safety items, leaving controversial and less important items to advisory standards.
2. Modify the process of developing legislation as may be necessary to ensure the views of all interested parties are heard on all proposed changes before placing it before the Legislature or other body charged with its approval.
3. Do not adopt existing consensus standards as legislation without careful examination of their practicability and advisability for this purpose.

#### Administration

4. Develop an inspection scheduling system to provide the most useful utilization of available resources. A possible list of priorities would be:-
  - (a) serious accidents, complaints, and requests for assistance;
  - (b) reported injury experience and compensation records of the individual company and its class;

- (c) non-injury accidents;
  - (d) spot checks of remaining industrial establishments to uncover developing problems before they become critical.
5. Determine (from statistics and such other sources as are available) the nature of the problem and the type of attention required so the educational, enforcement, consultative, and research facilities can be selectively applied to produce the most productive results with the resources available. The approach to be taken might be selected from:-
- (a) encouragement and consultative advice;
  - (b) training or retraining programmes;
  - (c) analysis of problems (including research, if required); or
  - (d) routine enforcement of legislation.
6. Improve the qualifications of safety officers to include a full recognition of how they can utilize the services of their counterparts to assist in a co-ordinated effort to best serve the cause of safety in industry.
7. Utilize experts from other disciplines more effectively. In addition to engineers and industrial hygienists, the safety movement could benefit greatly through effective utilization of the talents of psychologists, sociologists, and physiologists. Human factors engineers blend the talents of two or more of these disciplines.

#### Research

8. Increase research capability, particularly in multi-disciplinarian approaches to the problems of accident prevention and re-examination of fundamental beliefs.
9. Develop procedures to ensure adequate examination of all recommendations emanating from Coroners' inquests and research into these items where it appears advisable.

Statistics

10. Adopt a common coding system for industrial injury statistics to reflect true injury experience and facilitate comparison of Ontario's accident record with that of other provinces and states.



## APPENDICES

## Appendix 1 - Background Reasons for the Report

In examining the title of this report, the reader will be prompted to ask at least three questions: (1) Why was occupational safety selected for the survey? (2) What is meant by "Are They Worth It?" and (3) Why was the report written?

An attempt at answering these anticipated questions follows:

### 1. "Why was occupational safety selected for the survey?"

"Occupational Safety" refers to safety within a person's working environment. It is an area where theoretically at least some form of control can be exercised over the persons and their environment. It is a segment of the total safety picture where we have the best chance of controlling variables in our injury reporting. As such, it is the one area in which we should be able to make some meaningful comparison, not only from year to year and industry to industry, mine to mine, foundry to foundry, construction site to construction site, but by occupation of employee and between the programmes administered by various states and provinces.

### 2. "What is meant by 'Are They Worth It?'"

This part of the title refers to the outcome of comparing expenditure of man hours, material resources and money to the resulting accident frequency and severity of occupations in the industries studied. It is a question which must be answered if we are to ensure that our efforts are not in vain.

### 3. "Why was the report written?"

The answer to this question may be found in the *raison d'être* for the Labour Safety Council of Ontario.

The historical need for studies of the effectiveness of enforcement goes back to the beginning of mankind's social structure. Modern recognition of the need in Ontario was prompted by Ontario's Royal Commission on Industrial Safety. We will, therefore, use it as our starting point.

Also known as the McAndrew Royal Commission, its terms of reference were "to inquire into and report upon all statutes and regulations administered by the Department of Labour that govern the safety of workers with a view to the improvement, simplification, clarification and modernization of such statutes and regulations." The Commission's report, as presented to the Government on October 16, 1961, recommended among other things that there be created an "Ontario Safety Council" ... "to conduct a continuing study of all legislation and regulations pertaining to accidents and prevention, industrial health and hygiene, safety standards, inspection and enforcement, and make recommendations for legislative amendments." "The Council would be in a position to assist in the co-ordination of the work of the accident prevention associations with the voluntary safety effort, and in the integration of accident prevention work with the administration of safety legislation."

After several years of involvement in encouraging the modernization of Ontario's safety legislation, the Council turned its attention to the question of safety education and in January 1965 presented a report to the Honourable H. L. Rowntree, Minister of Labour, on "Accident Prevention and Safety Education in Ontario". Included in the recommendations of that report were the following:-

- (4) "The Workmen's Compensation Board shall, by regulation, delegate the function of accident prevention and safety education to a safety education commission, to be appointed by the Lieutenant Governor in Council.
- (5) "The Lieutenant Governor in Council shall appoint a safety education commission, comprising three members, one of whom shall represent management, one of whom shall represent labour, and one of whom shall represent neither and shall be the Chairman.

- (6) "The safety education commission so established shall exercise, on behalf of the Workmen's Compensation Board, all of its functions in relation to safety education and accident prevention in accordance with the regulation of the Workmen's Compensation Board passed pursuant to this section." (Refer also to McGillivray report, page 170.)

Although the recommendations contained in that report were not adopted entirely by the government, the Minister made a policy statement to the Legislature on June 21, 1965 which included the following:-

1. "To effect full co-ordination of both education and enforcement programmes at the policy making level, the Labour Safety Council will be reconstituted. Its membership will consist of a chairman, the presidents of the safety associations and corresponding senior labour representatives.

"In order to take full advantage of the knowledge and experience possessed by these representatives of labour and management, it is my intention to substantially expand the Council's present terms of reference. This body will now advise the Minister of Labour on all matters pertaining to safety education, enforcement and accident prevention. It will be called upon to suggest improvements in programmes and in co-ordination between programmes. It will continue to advise on such specific matters as proposed legislation and regulations referred to it by the Minister. The Council will be assisted by a full-time staff under an Executive Director.

2. "In order to provide integration of resources and co-ordination of programmes at the operating level, the Workmen's Compensation Board will establish a new Safety Education Department under a highly qualified Director of Safety Education.

"This Department will:-

- (a) supply central statistical services relating to accident trends and frequencies to all agencies involved in the safety field;
  - (b) review and direct the programmes of the safety associations in the light of accident trends in order to eliminate duplication and expand coverage;
  - (c) allocate funds and oversee safety programme budgets;
  - (d) develop new programmes, particularly for areas outside the individual concern of any one association;
  - (e) co-ordinate the production of promotional materials for all the associations and promote the interchange of ideas and materials and technical personnel between the associations;
  - (f) develop an integrated personnel administration for the safety associations, covering salaries, superannuation and fringe benefits.
3. "A close staff-level liaison between the advisory, enforcement and education agencies will be established through the Executive Director of the Safety Council, the new Director of the Safety Education Department of the Workmen's Compensation Board, and the Director of Safety and Technical Services of the Department of Labour."
- "Many of the detailed aspects of the Labour Safety Council's recommendations can only be implemented as this new machinery goes into operation. It will be our policy, however, to encourage employee participation in the education programme as they are the people who have the largest and most direct



stake in accident prevention. I sincerely hope that employee representatives will play an increasingly active role in safety education and will take their places at safety conferences and on safety committees at all levels."

The Executive Director of the Labour Safety Council was appointed on January 1, 1966 with terms of reference related to the foregoing statement of the Minister. As required by the terms of reference, meetings were held with the Director of Safety Education of the Workmen's Compensation Board and the Director of Safety and Technical Services of the Department of Labour.

It soon became apparent that although safety education and enforcement roles must complement one another, the administrators of the programmes believed that immediate problems facing them were of higher priority than a study of how the programmes could be co-ordinated. There was also fears expressed that the need for co-ordination may be misinterpreted as a need for integration. The problem was complicated further since the Director of Safety Education could not speak for the Accident Prevention Associations, and the Director of Safety and Technical Services was bound by existing legislation and what he believed to be government policy. During this period the Director of Safety and Technical Services was deeply engrossed in administering the enforcement programme under his control and the Director of Safety Education had much work to do towards implementing the Minister's policy statement respecting common functions of the Accident Prevention Associations.

As a result, these meetings were abandoned. In their place, it was arranged that the Director of Safety Education and the Director of Safety and Technical Services would attend all meetings of the Labour Safety Council and the aforementioned meetings would be resumed when the Council,

the Minister or the parties involved believed that a useful purpose would be served. This was later formalized by appointing the three officials as members of the Council. In the main, the Minister's policy has been implemented, but changes in structure and responsibility must be examined to determine if we are still on the right track.

The role of the Executive Director (of the Council) includes putting before the Council recommendations towards improving Ontario's safety programme. In accordance with this role, a report was prepared entitled, "A Proposal for the Future of Safety in Ontario". This was first considered by Council on January 12, 1967. It included suggestions for a more co-ordinated approach to Ontario's safety movement involving the Accident Prevention Associations and the enforcement groups. After further review and following a survey of the situation in various states and provinces as well as consultation with officials administering the various programmes, a revised report was presented to the Minister with the suggestion that it be reviewed by the Labour Safety Council.

This report was entitled, "Accident Prevention in Ontario, A Logical Analysis of What A Safety Programme Should Be" and was presented to the Council on January 7, 1970. Some of the recommendations (modified after Council discussion) were forwarded to the Minister in November 1971.

A further report of the Executive Director entitled, "Human Factors - Occupational Safety" was printed in December 1969 and has had wide distribution. This report questioned some of the fundamental concepts upon which our existing safety programme is based. Utilizing human engineering principles, it offered some suggestions as to the direction in which we should be moving, as well as indicating models of the accident sequence and an indication of the difference between a safe person and one who is unsafe.

The current report is an outgrowth of that which has been described, a broader survey of industrial establishments throughout North America, the outcome of research which has been conducted under the sponsorship of the Council at the Universities of Toronto, Waterloo and Windsor, and a report of Dr. Earle S. Hannaford respecting the use of behavioural scientists in Ontario's safety movement. The earlier reports relied mainly on rational analysis of past experience, the organizational structure and principles of safety in the broad sense. The current report attempts to focus on real reasons for lost time injuries and their relationship to governmental inspection, educational programmes and Workmen's Compensation using examples taken from personal visits to a sampling of industries throughout Canada and the United States.

Appendix 2 - The Survey and Its FindingsOntarioOrganization and Administration

The strengths and weaknesses of Ontario's programme can only be appreciated if we have an understanding of the organizational structure and the assigned roles of each agency. Although all organizations listed in "Safety in Ontario" have some impact on the total, the ones most directly associated with occupational safety are nine accident prevention associations and two government ministries. A rough organizational structure (Figure 2) showing the connecting links can be used as a basis for explanation.

To look at this organizational hodge-podge and realize that it is only part of the picture is at first confusing. A closer examination shows six main areas with two levels. The areas are policy setting, policy advisory, research, education, law enforcement, and insurance. The levels are legislative and administrative (Figure 3). The location of a programme on the organization chart is not as important as whether the groups effectively co-ordinate their roles in areas of potential duplication. Confusion of roles and lack of co-ordination may be due to the lack of understanding of the role of each, failure to define and assign roles which could apply to more than one group, and failure to take advantage of the resources of each group in achieving a co-ordinated approach to the problems that are encountered.

The separation of related functions still offers a challenge in trying to achieve effective co-ordination. The Prime Minister and the Ministers are legislative, the government ministries are enforcement, the Workmen's Compensation Board of Ontario is insurance, the Labour Safety Council is policy advisory, and the safety associations are education. Some individuals play a multiple role and we have tried to show this in Figure 3. The grouping appears to have some logic, but when we look more closely, we find overlapping, gaps, and complexities.

**Figure 2**

Ontario Safety Organization  
as of April 1, 1972.  
Not including voluntary organizations  
such as the Ontario Safety League and  
the Canada Safety Council.

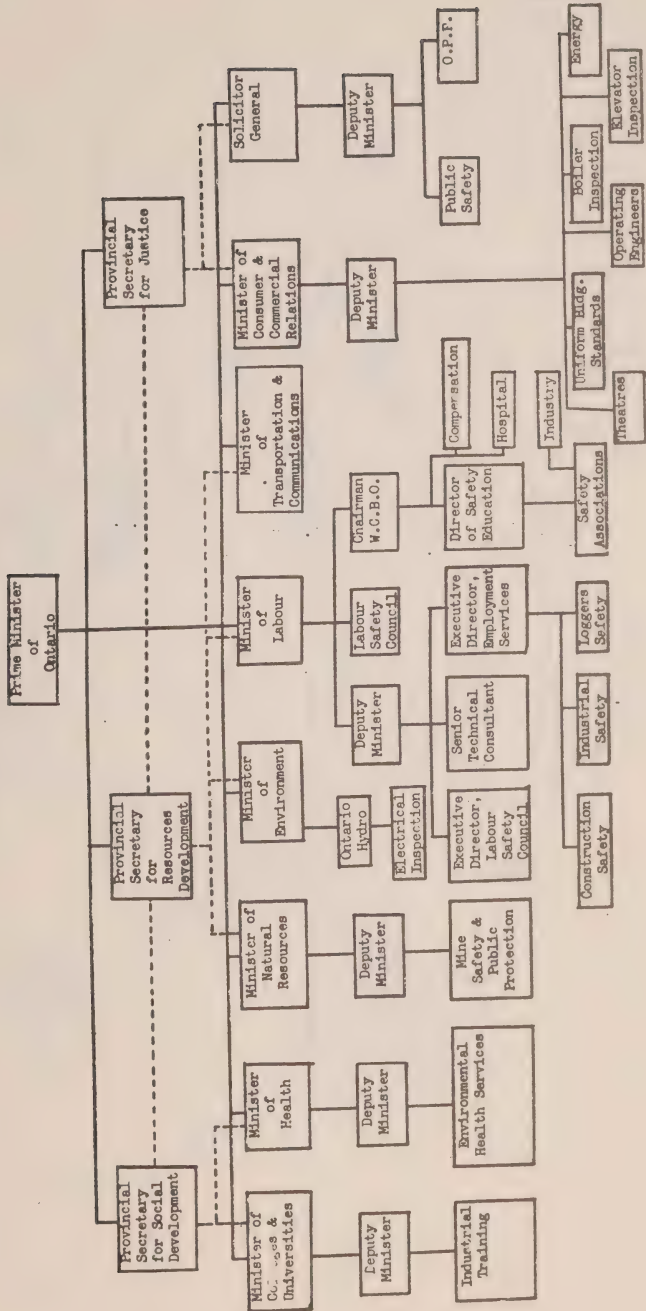
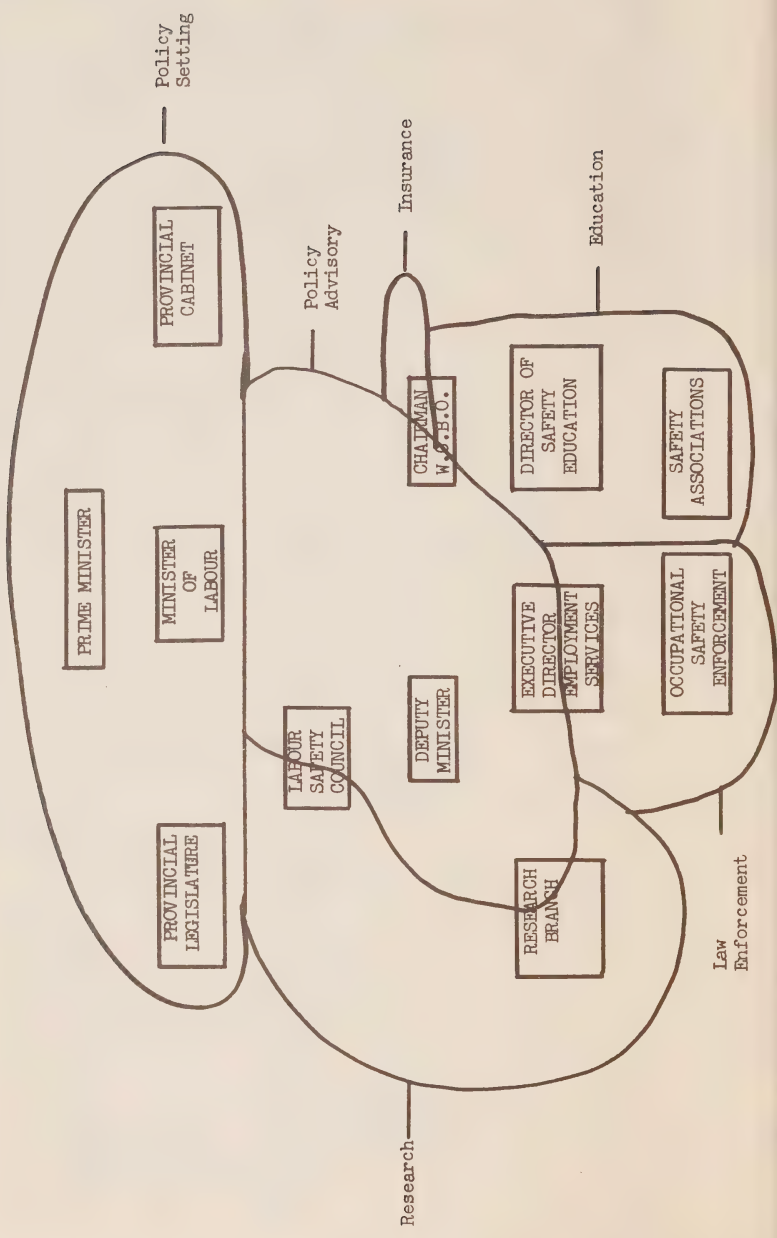


Figure 3(a)

Areas of a Safety Programme  
(Using Ontario Ministry of  
Labour as an Example)





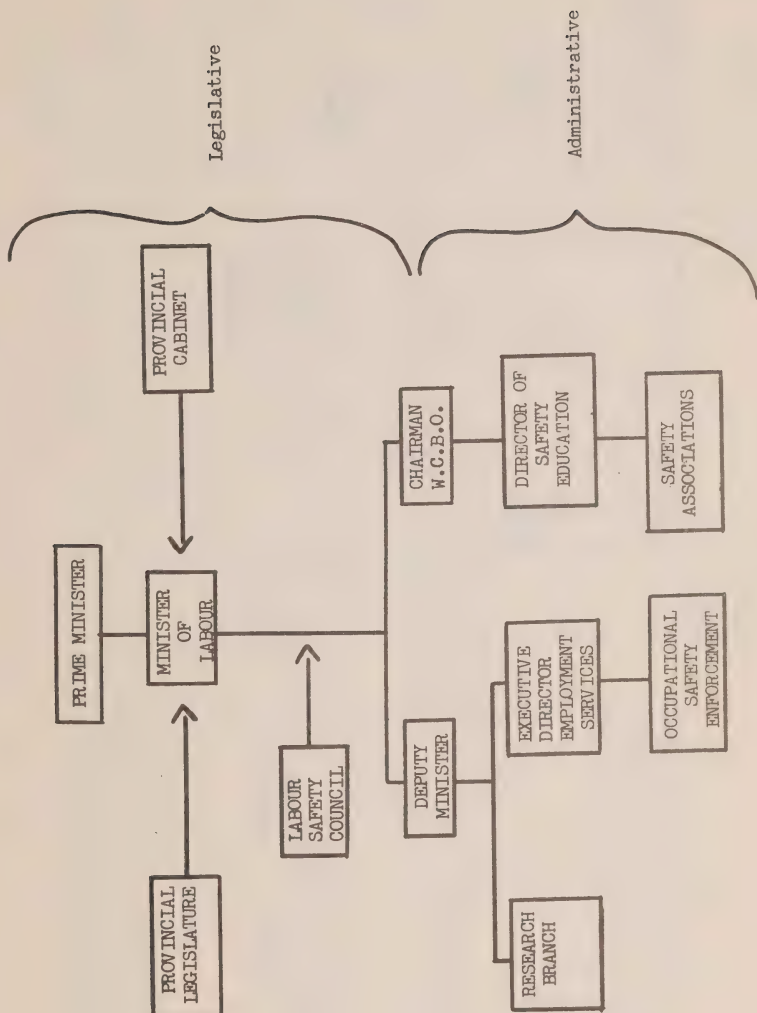
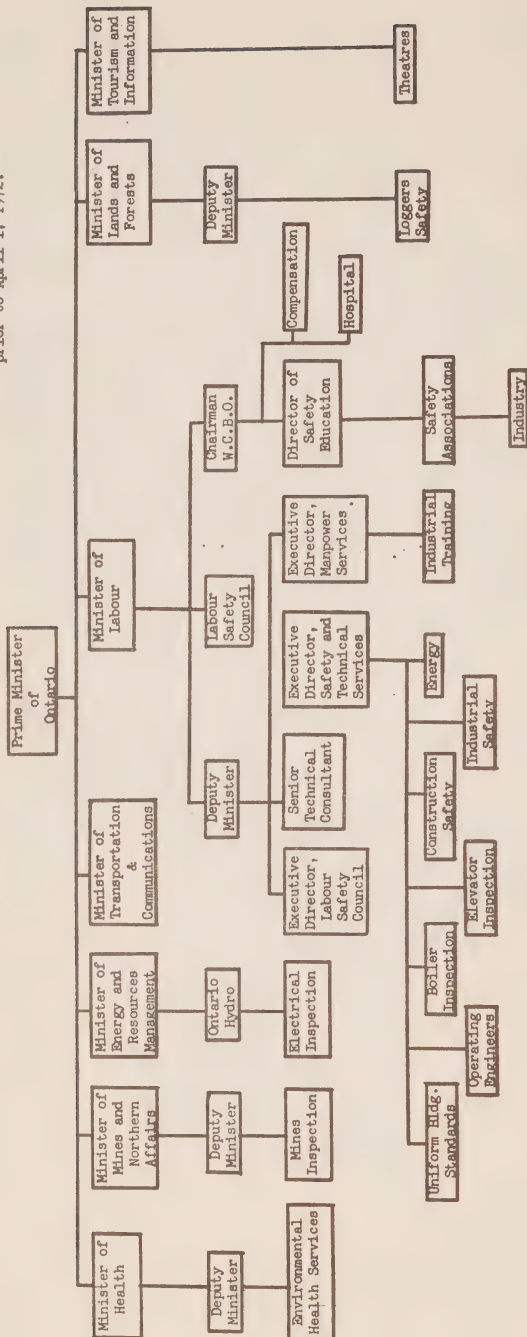


Figure 4



Note:- Figures 2 and 4 are incomplete in that they do not include Federal or Municipal organizations and some Provincial organizations such as inspection of motels, etc. The purpose of these figures is to show comparison of programmes before and after April 1, 1972 rather than explaining the total structure.

### Legislation Development

Perhaps the simplest example of the problem involves the procedure for promulgating safety regulations. The administrative section of the law enforcement agency prepares a draft, the policy advisory body recommends changes and then the administration finalizes the wording in co-operation with government lawyers. At this point, the appropriate Minister submits the regulations to his colleagues at the legislative level for approval.

The procedure usually works reasonably well, but it has weaknesses (Figure 5). The first weakness is that the advisory body does not have readily available to it all useful views on the subject. The solution is to invite interested parties to express their views on all proposed safety legislation and to conduct public hearings where this appears warranted.

The second difficulty is that the policy advisory body does not see the draft after it has been discussed with the government lawyers and do not have the opportunity to adequately advise the Minister on policy matters which have been lost or misinterpreted in the administrative process of preparing the final document.

### Premises Visited and Observations

To survey a sampling of industries in Ontario recognizing limitations of time and resources available (It was really a reconnaissance to uncover possible problems and indicate areas requiring further investigation.), three companies were selected from each of the following industry groups: metal fabrication, woodworking, foundries, chemical, textile, printing, electrical, and food. In each category one company was selected having an excellent accident prevention programme (from reported injuries), one had a poor accident record, and the third was considered to be average. The size of the companies was selected having a work force ranging from 50 to 200. From this selection, it was hoped we would be able to locate similar operations in almost any state or province. The first visits were made with field personnel to become more familiar with their work and



utilize their knowledge of the industry to assist in uncovering information that would not be obvious on the surface.

The results of the survey could incorrectly lead a person to conclude that occupational safety inspection is a waste of time. We have attempted to analyse the situation and offer some constructive suggestions as to the real use of inspection and other aspects of the programme in utilizing a selective rather than a shotgun approach. It must be recognized that Ontario's policy of dividing the role of education and enforcement between different agencies has left a broad no man's land between these two approaches which might generally be described as a consultative approach to safety. In some cases, this territory is occupied by more than one agency and in others, it is left barren.

The difference in programmes that has developed in the time interval between a brief survey of five years ago and the present, is that both the enforcement and educational bodies are moving more into the no man's land with no more co-ordination of the total effort than existed then. Educational officers and enforcement personnel who visit the same plants may operate in the same district for three or more years and not know one another. Although the educational officers no longer concentrate on traditional inspection where they formerly overlapped the role of the government inspector, the government inspector began to move into the role of the educator in assisting companies to develop a safety programme. There was a period where field officers of the enforcement and educational agency visited the same company on successive days offering a similar programme. The overlapping and possible conflict had reappeared in a slightly different form than before, but it is understood that the government inspector has now recognized the overlap and left the development of programmes to the safety associations.

After scrutiny by the parties involved in the survey of lost time injuries occurring over the past year, it was realized that the number resulting from conditions which could have been rectified by a visit by an inspection officer, prior to the accident, was negligible. It can, therefore, be said that insofar as this survey is concerned, there is no reason to believe that increased frequency of government inspection is warranted. This, however, does not alter the fact that the conditions for which inspectors found it necessary to issue directions were (in the main) ones which could result in injury. Although the true impact of an inspector's directions did not lend itself to quantitative measurement, it appeared that some directions were more likely to be complied with than others and that injury frequency and total compensation payments were affected more by other factors.

Although compliance with laws undoubtedly has some effect on the accident picture, this effect appears to be minimal. If true, a more selective application of resources and re-examination of how the inspection dollar is spent should achieve better results.

The survey produced some interesting illustrations of the need for more realistic statistics and a more selective approach. The following examples, taken from visits to Ontario industries, focus on some of the problems to be overcome.

Two companies having similar operations (structural steel fabrication) had lost time injury frequencies of zero and 122 per 1,000 workers respectively. Both attempted to keep their accidents down and each had rules regarding protective clothing as well as having a shop which was in good order with almost immaculate housekeeping. The company with the zero accident frequency went a little further in requiring and providing protective



clothing of high quality, increased mechanization and more persons assigned to clean up debris in work areas. The company with the higher accident frequency had a tendency to shut its eyes to some minor infractions of its safety rules respecting protective clothing.

There was little apparent difference, however, in real accidents and injuries. In the company with the zero accident frequency, an employee came to work the next day with a cast protecting a cracked bone in his leg, whereas employees of the company with the accident frequency of 122 would be on compensation for lengthy periods with lesser injuries. A third company in the same business having a frequency of 84, had more potential hazards than either of the other two.

The management of the company with the lower frequency appeared more enthusiastic in its programme and examined every possible weakness that came to their attention. As an example of this, they realized that standard safety shoes can be hazardous due to objects being trapped behind the metal toe. They implemented a programme requiring shoes with metatarsal protection and can cite examples where serious foot injury has been prevented.

In the premises visited, the cost of compensation and the reported injury frequency were not related directly to the hazards in the plant or the injuries incurred. Recognizing this, it could be suggested that official response to a high accident rate or high compensation cost in an industrial establishment should start with determining the nature of the problem and the type of attention required.

Another example of inconsistencies involved two companies where the one with the highest accident frequency had the fewest hazards. In the one with few hazards, employees were tripping over pieces of cardboard, string and anything else that might be lying around an otherwise clean plant, whereas the other company had no lost time injuries in spite of the presence of many potential hazards.

Since hazards cannot be eliminated completely, there may be a tendency for persons to lower their defences and operate more carelessly when no danger is evident and where no programme exists to remind them of the remaining dangers which, although minor, are magnified by inattention. To help resolve such situations, we should utilize psychologists, sociologists and human factors engineers to help solve problems that are not yielding to more conventional approaches.

A further example showed a company with sloppy housekeeping to have no more real injuries than one which was kept neat and orderly and performing similar operations. There were actually more lost time injuries in the company with the poor housekeeping, but an analysis of the type of injury indicated that the real difference was in whether an employee would or would not stay off work with a minor scratch or bruised shin.

This leads us to a recognition that in a factory where housekeeping is poor, an employee may pick his way cautiously (and safely) to his workplace whereupon he can clear a sufficiently large area to perform his work unhindered. It is similar to a logger who clears away the surrounding brush before swinging his axe freely and who ensures there is a safe retreat path before felling a tree. In reducing what appears to be an extremely hazardous situation associated with poor housekeeping, it becomes necessary to examine the total situation to determine whether an overall reduction in hazard is possible or if a more selective approach is necessary.

In general, the survey in Ontario uncovered examples of almost every type of problem viewed in the total survey and there is no reason to believe we are more successful than other jurisdictions in spite of greater commitment of resources to our official safety movement.

AlbertaOrganization and Administration

Alberta like the other western provinces\* has assigned the administration of Occupational Safety Legislation to the Workmen's Compensation Board. The Safety Division of the Board employs 37 inspectors to enforce the regulations and 8 educators to implement their Safety Advisor Programme, conduct surveys with a consultative approach to safety rules and conduct courses and seminars. (Figures include supervisors.)

In 1971 32,000 inspections were conducted. The province's population is approximately 1.6 million. In 1970 Compensation claims amounted to 160 per 1,000 workmen. The fatality rate for workmen under the Act was 3 per 10,000. This varies from year to year by as much as 20 per cent, but 1970 might be considered average.

The inspection service breaks the industries down into three categories (by class). These are high hazard (class rates above \$2.00 per \$100.00 payroll), medium hazard (\$1.00 - \$2.00 rate), and low hazard (class rate below \$1.00). The high hazard industries are scheduled for visits at least once per year. About 60 per cent of the medium hazard industries are covered each year and those considered low hazard are visited at least once every 5 years.

Construction inspections are more frequent and major construction projects are scheduled for bi-weekly visits. In addition, complaints are followed up promptly whether the complainant is named or anonymous and whether the complaint be in writing or by phone. Accidents of any serious nature are also scheduled for prompt investigation. The personnel spend about 60 per cent of their time on administering their role to the construction industry.

\*Since this survey was completed, Saskatchewan has transferred its safety programme from the Workmen's Compensation Board to the Department of Labour.

Although final appeal from rulings of inspectors is to the Workmen's Compensation Board, the intent of a higher appeal is provided through the office of the Provincial Ombudsman.

Another interesting variation in Alberta is the payment of Compensation based on yearly earnings of the worker rather than the shorter (usually four weeks) earnings used for calculations in most other jurisdictions.

#### Merit Rating

Approximately 80 per cent of the industries have been placed on a merit rating by the Board. A merit rebate is given up to 1/3 of the class rate in any year following three consecutive years of experience less than 75 per cent of their assessment. Demerit increases up to 1/3 are also levied and employers with consistently poor records or flagrant violations of the rules may receive double assessments.

#### Legislation Development

In Alberta, the regulations are drafted by the Accident Prevention Department then circulated to industry, including the Safety Councils. They are then revised by the Accident Prevention Department and industrial representatives are usually consulted as to the changes prior to sending them a second time to industry for comment. After being satisfied that all views have been given due consideration, they are processed through the Board to the Government and become mandatory. It is believed that in this way the best, most workable rules are adopted.

#### Safety Education

There are now 24 Safety Councils in the province which receive moral and advisory support from the Board but no financial support. Their prime role is to encourage an interest in safety among industries of the class represented and to discuss common problems. Their role would appear to be similar to their counterparts in Manitoba (see draft Council Constitution and accident investigation report - Figures 6 and 7).

Training of safety officers in Alberta have received more attention than in some other jurisdictions as evidenced in the following paper.



## THE TRAINING OF SAFETY OFFICERS

Address to: Canadian Association of Administrators  
of Labour Legislation  
15 September 1971 — Victoria, B. C.

By: R. C. Davis, Safety Director  
Workmen's Compensation Board of Alberta

### INTRODUCTION

1. Mr. Chairman, Ladies and Gentlemen, it is a distinct honour for me to be asked to speak to you on the training of Safety Officers. The subject is within the terms of reference of the C.A.A.L.L. Safety Committee and one which no doubt will become of increasing importance as more public concern and emphasis is given to the ever increasing toll of accidents. We were told, for example, at the recent Canada Safety Council Conference in Saskatoon that industrial accidents were occurring in Canada at the rate of 3,500 each day. Indicative of the concern by the public and by governments is the formation in recent years of the Canada Safety Council, the passing of the Canada Labour (Safety) Code Act and in the U.S.A. the passing of the Occupational Safety and Health Act. Incidentally, it is noted that the U.S. government intends to employ some 2,000 inspectors to help administer the Act. Formal training of these people has begun. In Canada, if better progress is to be made in the reduction of accidents, Safety Officers employed in both industry and government agencies must have the best possible training.

### SAFETY SPECIALISTS

2. Many Canadians are now employed either full or part time in the field of accident prevention. They are designated by a variety of titles which probably indicate an equally wide range of duties.

- |                       |                           |
|-----------------------|---------------------------|
| - Safety Director     | - Safety Technician       |
| - Safety Manager      | - Loss Prevention Manager |
| - Safety Engineer     | - Loss Control Engineer   |
| - Safety Inspector    | or simply                 |
| - Safety Co-ordinator | - "The Safety Man"        |

3. The profession of the safety man began with the appointment of first aiders at places of employment. Later it became convenient on moral or legal grounds to make the first aider the safety man. Sometimes loyal and dedicated individuals who lacked qualifications for more responsible positions in the company were given the first aid and safety assignment. This reminds me of the story of the Whistle Puller recently published in one of the trade journals. It seems that a friend of a certain Plant Manager had experienced very difficult times, had no particular qualifications or skills but was too proud to accept charity. The manager wanted to help him without appearing to offer charity. He put him on the payroll at a small wage and gave him the title of Whistle Puller with the responsibility to signal when work was to commence and cease in the plant. Due to a very unfavourable accident record, the plant came under pressure to appoint a safety man. As the Whistle Puller had considerable spare time, he was appointed the safety man. Such men undoubtedly received little or no training. This and their unfortunate appointments were indicative of a lack of understanding by some management people on how to effectively train and employ professional safety men.

4. Today many are employed either full or part time in a wide variety of accident prevention work in industry and in government and at various levels of management. Some examples are the technicians employed by government agencies who inspect building elevators, ski-lifts, boilers, gas appliances, electrical apparatus, pipelines or who investigate hazards to industrial and public health. The police are concerned with accident prevention, particularly traffic safety on the highways and on city streets. There are the technicians employed by suppliers and consultants who inspect and service fire fighting equipment and breathing apparatus. Such men, of course, require very specialized training in their technical field.

5. One might take the view that senior supervisory individuals who are engaged in very hazardous industries and establish good accident prevention records, are outstanding safety men. Examples include:

- the construction superintendent who erects a 35 storey highrise building without serious injury to any of his men,
- the toolpush (superintendent) on an oilwell drilling rig who has drilled wells, night and day, summer and winter under hazardous mechanical, climatic and terrain conditions for six years without a lost time injury to any of his men.

6. I wish to confine my remarks, however, to the training of those employed on general safety activities in industry who will be referred to as Safety Co-ordinators; and to the training of those employed as Safety Supervisors in Workmen's Compensation Boards.

#### TRAINING COURSES AVAILABLE

7. Before dealing with the safety training available in Alberta, I should mention that industrial safety training is provided by many organizations in Canada and the U.S.A. They include universities in both countries, Safety Councils, Safety Associations, correspondence schools, private training establishments and Workmen's Compensation Boards. The training varies from a Master's Degree in Industrial Safety at universities to one day courses. In this regard, I should also mention that the Workmen's Compensation and Accident Prevention Branch of the Canada Department of Labour have just recently published a very useful catalogue of training courses in Occupational Safety and Health.

#### FUNDAMENTAL OBJECTIVES

8. As you will fully appreciate, before developing a training program it is necessary to have the objectives clearly established. I would like to review very briefly with you some of the more important fundamentals in industrial safety. In addition to the obvious humanitarian reasons, there are very sound business reasons for conducting an industry without accidents. Accidents which injure workmen or damage equipment or property are wasteful and reduce the profit margin. An objective in an industrial firm must be to achieve Efficient Safe Production of either goods or services. Primary responsibility in a company for achieving Efficient Safe Production lies with the management people holding line positions between the President and the Foremen.



9. Let me at this point define an industrial accident\*. It is an unplanned, unexpected event which interferes with the production process. When accidents occur in the production of goods or services, and particularly in significant numbers, they are basically due to shortcomings in the control of men, materials or processes. In order to prevent such unplanned, unexpected events which cause damage or injury, an employer must improve the management system in his organization. Frequently, he needs the assistance of a specialist, a Safety Co-ordinator. He needs a person who is not only technically competent but who can assist in making improvements to the management system. The Safety Co-ordinator must know the basic principles of management - planning, organizing, staffing, directing and controlling - that result in efficient safe production. He must understand the concept of management by objectives and how to function in a staff position. Where does an employer recruit such intelligent, well-informed Safety Co-ordinators? The known supply is limited but if you can't recruit them we're back to the same answer - train them!

#### TRAINING OF SAFETY CO-ORDINATORS

10. The training provided by the W.C.B. for company Safety Co-ordinators usually is limited by two main factors. Generally speaking, employers in Alberta will allow their safety men only one week for formal training. It is noted that similar courses conducted in Quebec, Ontario, Saskatchewan and British Columbia are also of five days duration - probably for the same reason. The other limiting factor is the variety of backgrounds and interests brought by the candidates to formal courses of this nature. The Safety Co-ordinator of a trucking company, for example, is not interested or concerned about the hazards of drill stem testing in an oil well. This limits the technical instruction to matters of common interest to most industries. Perhaps a third limitation on safety training courses is the interest that candidates have in workmen's compensation, the assessment and claim systems and related administrative procedures.

11. The Safety Co-ordinators' Training Course offered in Alberta provides a well-rounded training within these limitations by including the following topics:

- Management Responsibility for Safe Production
- Safety Co-ordinator's Duties
- Production Losses and Costs Due to Accidents
- Accident Analysis and Reports
- Job Hazard Analysis
- Problem Solving
- Accident Control and Preventive Measures
- Job Instructional Training
- Safety Committees
- Industrial Hygiene
- Function of the Workmen's Compensation Board

12. The course is limited to 20 candidates in order to permit the use of conference leadership techniques and to promote discussion. A critique is obtained from every candidate, and the syllabus and instruction method up-dated frequently to meet the requirements of industry. The first such course was conducted in 1965. Since then, 329 Safety Co-ordinators have been trained in a total of 18 courses.

\*For purposes of the Workmen's Compensation Act of Ontario, "Accident" is discussed in some detail in the "Report of the McGillivray Royal Commission (1967)". Included in this (page 37) is a statement by an official of the Board (Mr. W. Kerr) outlining how it is interpreted by adjudicators.

TRAINING W.C.B. SAFETY SUPERVISORS

13. In early days, the instruction received by personnel who were to be employed as W.C.B. inspectors was limited to contact training and learning by experience. The hazard of contact training is, of course, that the trainee may pick up all the bad habits of the old hands in the organization. Learning by experience takes too long - serious and embarrassing mistakes will be made in the process - and the method is very inefficient. Formal training is a necessity.

14. Following a period of familiarization, Safety Supervisors employed by the W.C.B. are given 5 weeks of formal training, of which the last week is the Safety Co-ordinators' Course previously discussed. The courses are conducted in Edmonton. Senior officials of the Board and of Government agencies such as the Director of Industrial Health Services address the candidates. Instructors with 15 years or more experience in industrial safety, with experience in industry as well as in Government agencies, ensure the best possible training. The syllabus of the course includes the following:

- Organization and Function of Departments of the W.C.B.
- The Workmen's Compensation Act
- Departmental Administration
- Safety Regulations
- Fundamentals of Accident Prevention Control
- Job Instruction Training
- Industrial Health
- Job Hazard Analysis
- Public Speaking
- Inspection and Accident Investigation
- Conducting Consultive Surveys
- Use and Care of Equipment Such as Cameras, Projectors, Testing and Breathing Apparatus

Instruction given in the classroom and in the field amounts to 182 hours of formal training.

15. Safety Supervisors are expected to continue their training after they have completed the basic courses. In their own time they attend courses given by the University Department of Extension and Technical Schools, as well as taking courses by correspondence. The Board reimburses the cost of any courses which will assist students in their duties. Examples of such courses are Engineering Management, Principles of Management and Supervision, Communication and Interview Techniques, Industrial Ventilation, Strength of Materials.

16. Other forms of continuing training include participation in formal weekly meetings in which the causes of recent accidents of special interest are analyzed in depth and preventive measures thoroughly examined. Unsafe practices and conditions of special interest observed by the staff are reviewed at these meetings. To ensure a continual flow of current information on accidents, it is most important that the Safety Supervisors are provided with copies of reports on all accidents which are occurring in their area of interest. Such information is readily available in a Workmen's Compensation Board which receives reports from all injured workmen who are under The Act, their employers and from Doctors.

### SAFETY CONSULTANTS

17. Mr. Bruce Legge, Chairman of the W.C.B. of Ontario, when addressing the Canada Safety Council meeting in Saskatoon, stated that one of the two principle efforts in occupational safety should be management counselling. The W.C.B. Safety Department in Alberta provides such a service through its Safety Advisor Program. The Safety Supervisors who act as consultants and provide this assistance are selected for this type of work, based on their training and experience before joining the Board. Formal training in management, extensive supervisory experience and competence as an instructor are some of the qualifications regarded as necessary. In addition to the training already mentioned, those employed as consultants are instructed on the technique of conducting Safety Advisor Programs. Basically this involves identifying shortcomings in the management system which are fundamental to the company's accident problems and in recommending and assisting with measures to improve the system.

### ADVANCED TRAINING

18. Those employed as consultants together with other Safety Supervisors have also received some advanced training in management. Beginning in 1967, an advanced course of training of one weeks duration has been conducted yearly at the Banff School of Fine Arts for safety personnel employed by the W.C.B.'s of the Western Provinces. The course was conducted by the staff of the Banff School of Advanced Management. The syllabus of the course included:

- The Work Organization
- Supervisory Problems
- Management Philosophy on Accident Prevention
- Functions of Management

It is my understanding that the majority of the safety staff of the W.C.B.'s of Saskatchewan, British Columbia and Alberta have taken this useful training.

### THE FUTURE

19. In my opinion, the need for highly qualified professional safety personnel will continue to increase, both in industry and in government agencies, for the following reasons:

- rising pressure of public opinion demands greater effort in prevention of accidents and the resulting needless waste
- the increasing complexity of industrial equipment, materials and processes creates increased hazards for workmen (e.g. radioactive materials and laser beams now in common use in industry)
- and finally, the adoption of more sophisticated procedures for the prevention of losses and waste in industry demands better training for those who will administer those procedures.

20. The new philosophy is very well presented in a textbook entitled:

"Total Environmental Control"

by Messrs. John Fletcher and Hugh Douglas

It has been presented at recent, numerous Safety Seminars including the Saskatoon Conference of the Canada Safety Council. In summary, the new concept is to develop in each company a program which is designed to eliminate or reduce all incidents which are indicative of inefficiency in the system, such as fire, inadequate security, hazards to health, pollution, unsafe unreliable products and accidents which cause injuries or equipment damage. This type of program is now being introduced into some firms in Canada, the U.S.A. and the U.K. I believe that such programs will prove very successful in reducing losses and as a result, there will be an increasing demand for specialists to assist management in the design and implementation. Loss Control Engineers, or Loss Prevention Managers will need extensive training in a wide range of subjects. Who is going to provide such training in Canada?

21. It seems logical that such training should be given by organizations which already conduct courses on Advanced Management and that have the facilities necessary for courses with a duration of a month or more. In Western Canada, the Banff School of Fine Arts not only meets these requirements but has had experience in conducting courses for Safety Supervisors of the W.C.B.'s. It is my personal opinion therefore that when the demand has been established for specialists in total loss control, the training of Loss Control Engineers and Loss Prevention Managers should be undertaken by the Banff School of Advanced Management.

CONCLUSION

22. In conclusion, Ladies and Gentlemen, progress has been made in developing and implementing courses of training in industrial safety for Safety Co-ordinators employed in industry and for Safety Supervisors of the Workmen's Compensation Boards. The profession of safety man, however, has evolved from the project first aider to a firm's Loss Prevention Manager. If he is to achieve this position, the professional safety man must not only be competent technically, he must be thoroughly familiar with the functions of management and with the most effective management procedures for obtaining Efficient Safe Production. If further progress is to be made to meet the increasing demands for a higher standard of safety in industry, the best possible training must become available for the professionals.

Edmonton, Alberta  
September 1971

R. C. Davis, Safety Director  
Workmen's Compensation Board of Alberta



DRAFT CONSTITUTION

FOR: COUNCIL/ ASSOCIATION

1. NAME:

This Association shall be called the \_\_\_\_\_  
\_\_\_\_\_.

2. DEFINITIONS:

The Workmen's Compensation Board of the Province of Alberta shall hereinafter be called the "Board".

\_\_\_\_\_ shall hereinafter be called the Council/Association.

3. OBJECTIVES:

- A. The Prevention of Accidents in industry classified by the Board as class \_\_\_\_\_.
- B. The lowest possible Board Assessment rate for class \_\_\_\_\_.

4. METHOD:

By holding meetings of representatives of employers at regular intervals in order to:

- a. Provide a free exchange of information on the hazards and unsafe practices in the industry and on the most efficient means of preventing "on the job" accidents.
- b. Assist each other in the prevention of "on the job" accidents.
- c. Provide a means whereby all members may have an opportunity to discuss with representatives of the Board matters of mutual interest.
- d. Review drafts of Board Safety Regulations and to recommend amendments and/or additions to such regulations.
- e. Develop and present briefs to the Government of the Province of Alberta suggesting changes and/or additions to the Workmen's Compensation Act.
- f. Receive and analyse statistical information provided by the Board on the frequency and cost of injuries to the membership.
- g. Plan and conduct safety inspections of places of employment of members where practical and worthwhile.

- h. Arrange and provide encouragement for other employers in Class to become active members in the Council/Association for the benefit of all.

5. OFFICERS AND ELECTION OF OFFICERS:

- a. The officers shall be Chairman, Vice-Chairman and Secretary-Treasurer.
- b. The Vice-Chairman will automatically become Chairman at the end of each calendar year.
- c. The Vice-Chairman and Secretary-Treasurer will be elected annually from the membership at the final meeting of each calendar year.
- d. No two executive officers shall be members of the same firm.

6. DUTIES OF OFFICERS:

A. CHAIRMAN:

- (a) To preside over all meetings and provide energetic and firm guidance to the Council/Association to ensure that all activities are directed toward the achievement of the Council/Association objectives.
- (b) To preserve proper decorum, facilitate procedures, in accordance with the agreed to Agenda, and where necessary, summarize discussions.
- (c) May suggest what items of business he thinks should be considered.
- (d) Must state all questions to be voted on, call for vote, and announce results.
- (e) He may not make a motion or take part in a vote while in the chair unless such vote is a deciding vote.
- (f) The Chairman will be an ex-officio member of all committees.

B. VICE-CHAIRMAN:

In the absence of the Chairman, the Vice-Chairman shall preside at all meetings, and as such will assume the duties and responsibilities of the Chairman.



C. SECRETARY-TREASURER:

- (a) To record minutes of all meetings, and shall have same ready for typing 10 days after the meeting.
- (b) To process all correspondence.
- (c) To keep roll call.
- (d) To present minutes of each meeting at the next succeeding meeting.
- (e) To prepare the agenda for each meeting in conjunction with the Chairman and arrange for Council/Association meeting place.
- (f) To prepare and distribute all reports as may be required.
- (g) To distribute the agenda of the forthcoming meeting, together with any committee reports and the minutes of the last meeting. This distribution to be completed not less than ten days prior to the meeting.

7. MEETINGS:

To be held \_\_\_\_\_,  
\_\_\_\_\_, or an alternate date agreed to by the Chairman.  
\_\_\_\_\_ of the membership shall constitute a quorum.

8. MEMBERSHIP:

Membership shall be limited to:

- a. Employers who have an account under the Boards \_\_\_\_\_ classification.
- b. Representatives of the Board shall be permitted to attend for liaison purposes in an advisory capacity. They shall not hold any Council/Association office or have voting privileges.

9. REPRESENTATIVES:

- a. Each member may send as many representatives to the meeting of the Council/Association as desired but limiting voting privileges to one representative.
- b. All voting representatives must so identify themselves during the roll call at the commencement of the meeting.

10. AGENDA OF MEETING:

The Agenda of meetings shall normally include:

1. Introduction of representatives.
2. Presentation of minutes of previous meeting.
3. Business arising out of minutes.
4. Correspondence and/or Board Statistics.
5. Accident reports and discussions from members.
6. New of unfinished business.
7. Report from previous host company on delegates comments of tour of their premises.
8. Delegates comments of tour of current Host Company's premises.
9. Date, Time, Place and Host Company (if applicable) of next meeting.
10. Film (time permitting) and/or Guest Speaker.
11. Adjournment.

11. GENERAL:

- a. If necessary special committees shall be set up at the discretion of the Chairman.
- b. All members will be required to submit monthly appropriate accident statistics not later than the 10th of the following month.
- c. Constitution to be effective upon adoption by the membership.
- d. Amendments to this Constitution must be presented at a regular meeting with notice of vote to be taken at the next succeeding regular meeting attended by not less than \_\_\_\_\_ of membership.

# INVESTIGATION REPORT AND ANALYSIS OF ACCIDENT TO BE COMPLETED AND BROUGHT TO YOU NEXT SAFETY ASSOCIATION/ COUNCIL MEETING

ACCIDENTS OF THIS NATURE CAN BE PREVENTED IN THE FUTURE ONLY IF IT IS KNOWN HOW  
AND WHY THEY HAPPENED

Fill out this report in detail. ~~It will help~~ to analyze this accident clearly

1. EMPLOYER'S NAME \_\_\_\_\_
2. NAME OF SAFETY ASSOC./COUNCIL \_\_\_\_\_
3. Date of Accident \_\_\_\_\_ Hour of Day \_\_\_\_\_  
Occupation when injured \_\_\_\_\_ Age \_\_\_\_\_ Reg: Occupation \_\_\_\_\_
4. Was first aid rendered? \_\_\_\_\_ Describe \_\_\_\_\_
5. Did injured see a doctor? Yes No Is he disabled from working? Yes No
6. Witnesses Yes No
7. Description of Injury. (Be specific) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. Brief description of what happened including:
  - (a) Job being done.
  - (b) How the accident happened.
  - (c) Machine, tool, equipment or object involved.
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
9. Exact location of accident. \_\_\_\_\_
0. Was Supervisor present at time of accident? \_\_\_\_\_
1. Was there damage to company equipment or property of third party? If so describe briefly and estimate the cost. (Indirect costs can be 7 or 8 times direct costs).  
\_\_\_\_\_  
\_\_\_\_\_
2. Direct cause: What act or condition led directly to the accident? If more than one, give cause or causes readily subject to correction. (See A on reverse for list of unsafe acts and conditions).  
\_\_\_\_\_  
\_\_\_\_\_
3. Why was the above unsafe act committed, or why was the above unsafe condition present? (See B on reverse for list of typical reasons).  
\_\_\_\_\_  
\_\_\_\_\_
4. WHAT HAS BEEN OR WILL BE DONE TO PREVENT A SIMILAR ACCIDENT? Please be specific as this information will be valuable in preventing similar accidents elsewhere.  
\_\_\_\_\_  
\_\_\_\_\_

Arizona

Organization and Administration

Until recently, the state's enforcement programme was minimal with only two inspectors concentrating primarily on accident investigation and reacting to complaints within their limited abilities. Education and inspection were carried on by the companies carrying compensation insurance, primarily the state fund (operational the past two years), but without any legislative backup. They could refuse to insure if standards were too low, but this was rarely if ever resorted to.

The personnel recently added to the Industrial Commission's inspection staff are all well-educated, one having a degree in law and another working towards his Ph. D.

The state is on the verge of having its plan approved to do its own inspection to standards equal to O.S.H.A. and with its own Occupational Safety and Health Review Commission.

Premises Visited and Observations

The two factories visited and the construction sites viewed from the ground appeared to be comparable in physical safeguards to premises visited in Ontario, and it can be assumed that much of this is due to voluntary action with some prompting from insurers. This is reinforced by discussions with company officials who confused the new state compliance officers with representatives of the compensation insurers.

British ColumbiaOrganization and Administration

The organization of British Columbia's occupational safety movement is shown on the attached chart (Figure 8). It is similar to the other western provinces, but there are some differences in approach.

There is no permanent advisory board or committee, but a committee is formed when need for changing regulations is perceived. This committee is Chaired by a Commissioner of the Workmen's Compensation Board and includes representatives of labour and management. It receives advice and assistance from three Departments of the Workmen's Compensation Board's safety programme. These are Research and Education, Industrial Hygiene, and Inspection. Rather than having a single safety division under a Director, British Columbia has made one of the Workmen's Compensation Board Commissioners responsible to ensure co-ordination of the three Departments.

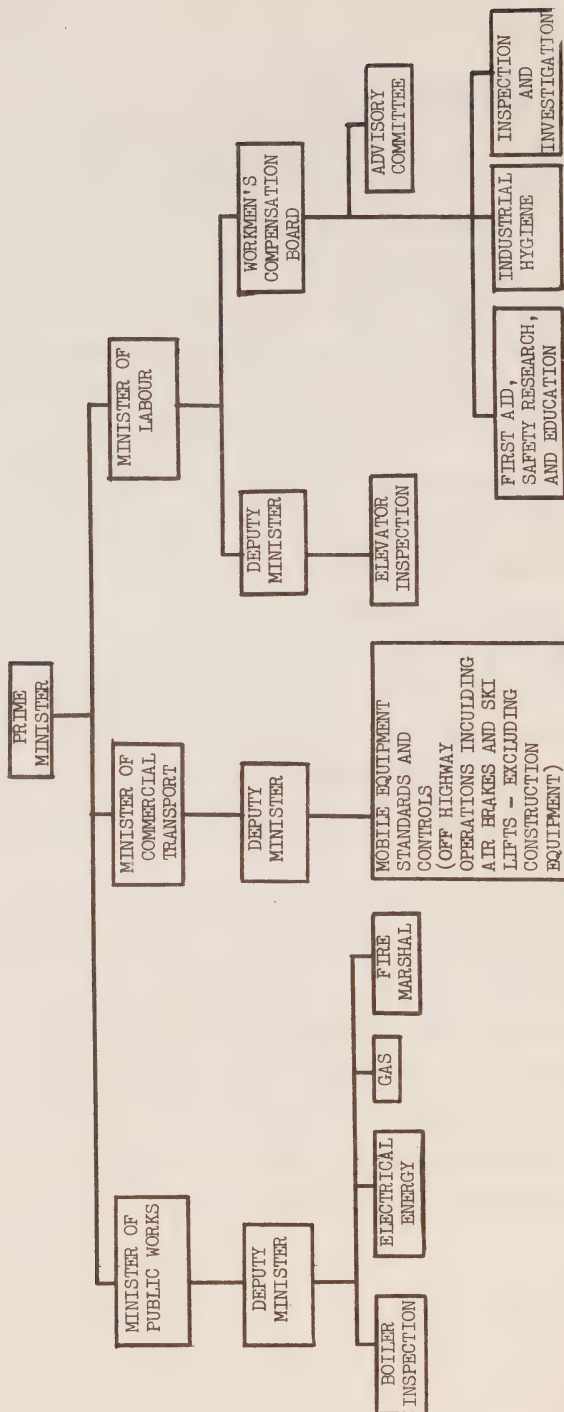
Inspectors in British Columbia enforce the regulations using a consultative approach which includes explaining to top management the reasons for requirements and emphasizing that corrections of the observed deficiencies are only part of a total safety programme. The educators concentrate on training and education including courses and distribution of literature, posters, etc.

Field staff, including supervisors, consists of 42 inspectors, 5 industrial hygiene specialists, and 12 education (6 first aid, 2 back injury courses, 2 general education, 2 engineering).

The inspectors must classify premises from poor to excellent (5 levels) in several categories so a weighted determination of need for inspection can be made as well as an indication of improvement since last visit. The computer print out for the inspector's report lists the last 20 lost time injuries and the last 20 non-lost time injuries.

Figure 8

British Columbia Safety Organization



Also:- Federal Works subject to  
Canada Labour Code.

Some inspection and training by Council of  
Forest Industries (privately funded).

Public safety by British Columbia Safety Council.



### Merit Rating

A form of merit rating is applied in British Columbia and the Board uses its powers of fines and increased assessment to force unco-operative employers to adopt a positive attitude towards safety.

### Legislation Development

Draft regulations are always put out for public hearings and are then revised by the committee as required prior to being Gazetted. The difference between Ontario and British Columbia in this procedure is that the Workmen's Compensation Board in British Columbia has been delegated the power to make regulations.

### Safety Education

British Columbia's safety posters are among the best I have seen. Many of them include several important safety messages within a single picture, but words are kept to a minimum. One shows workers poling huge logs while standing on them. The caption, "Drowning is as Easy as Falling Off a Log" is thought provoking and unlike most safety posters, does not restrict the observer to a single message or muddy the issue with a lot of words.

The prime message, "Wear Your Lifejacket" is played down to the point that you almost have to look to find it thereby preventing unnecessary distraction from the more subtle messages expressed by the picture.

In addition to the work of the Workmen's Compensation Board (see "Organization and Administration") industry associations (privately financed) do some supplementary safety training which has specific application to the industry's needs as seen by the members, e.g. The Council of Forest Industries.

California

This state is an anachronism.

The reported injury and fatality rates are relatively low in comparison to some other jurisdictions. It would be logical to assume that their adversary system and private insurers would result in fewer claims settled, but death rates should not be affected as much.

In California, an employee cannot sue his employer for an industrial injury, but he can sue any other involved person for related damages; however, such suits are infrequent due in part to a lack of third party involvement and a lack of interest in small suits. One case was cited where an employee is suing the manufacturer of a truck in which a faulty part contributed to an accident in which he was injured. The employer is sitting back hoping the employee will win since said employer is self-insured and will be able to regain monies paid to the employee under compensation if the employee wins the suit.

There seemed to be fewer short term injuries in premises visited here than elsewhere. The insurers, however, appear to be generous in compensation settlements. Possibilities advanced for this apparent generosity included a desire to leave employees satisfied, reducing pressures for adoption of more costly compensation laws.

The staff of the government agency appear to be well-qualified and experienced. They utilize the consultive approach to enforcement encouraging companies to develop safety programmes.

See also Figure 12, Page A3-6.

ManitobaOrganization and Administration

Although considered by many people to be primarily an agricultural province, Manitoba has always had some manufacturing operations and in recent years has expanded considerably in this field. Enforcement of laws respecting the safety of boilers, elevators and similar devices is under the control of the Department of Labour, whereas the Occupational Safety Legislation is handled by the Workmen's Compensation Board. The Board approaches enforcement in a consultative way concentrating on the soft sell and encouraging employers to improve their safety programmes and reduce hazards. They do, however, keep the big stick in reserve for employers who are not responding to the consultative approach and the Board issued twenty stop work orders in 1971.

A prime difference between Manitoba and most of the other jurisdictions visited is that the educational and enforcement role in each district is handled by the same man. Mining is the only operation which is not covered by the Accident Prevention Division of the Workmen's Compensation Board. The field officers tend to concentrate on an analysis of accidents including the areas of the plant where they occur, age group, time of day, and other factors which could be relevant. They also do a complete survey of the premises watching for hazards related to the accidents which have occurred as well as other potential hazards of which they are aware from their own experience and which are covered under the Employment Safety Act or the regulations thereunder.

The Employment Safety Act assigns its administration to the Workmen's Compensation Board which is empowered to appoint inspectors to carry out duties similar to the Industrial Safety Officers in Ontario. The Compensation Board's powers and responsibilities under section 16 of the Act include:-

Powers of Board

16 The board may

- (a) carry out studies and research, or cause studies and research to be carried out, in matters relating to employment safety, including, without limiting the generality of the foregoing, safety devices and safe working practices, procedures, techniques;
- (b) either on its own initiative or in co-operation with employers, employees, employers' organizations, or employees' organizations, or all or any of them, develop and carry out programmes to educate and encourage employers and employees in the adoption of, and adherence to, safe working practices, procedures, and techniques, including the publication and distribution of notices, papers and bulletins, lectures and courses, with or without visual aids, in respect of the causes and prevention of industrial accidents, industrial diseases, first aid, and other related matters.

and section 17, respecting

Advisory Committees

- 17 The board may establish advisory committees, on which employers and employees are represented, to assist the board in establishing reasonable standards of safety in places where employees are employed and to recommend rules and regulations respecting safe employment practices, procedures, and techniques.

Another difference from the Ontario Legislation is that appeal from an inspector's direction is to the Workmen's Compensation Board.

Appeal

- 15 (1) Where an inspector makes an order under this Act or the regulations,
- (a) the person against whom the order was made; or
  - (b) where the order was made against the employee, the employer of the person against whom the order was made; or

(c) where the order was made in respect of work at a site of construction, the person for whom the construction is being carried out, whether under a contract or sub-contract: may appeal the order to the board; and the board may allow or deny the appeal, rescind, amend, or suspend the order, or make such order as the board deems necessary.

#### Hearing

15 (2) The board shall not deny, in whole or in part, an appeal made under subsection (1) unless it has held a hearing at which the person appealing has the right to appear in person or be represented and submit evidence and argument.

Of the premises visited in Manitoba, most persons contacted appeared interested in accident prevention. One company having approximately 150 employees had only 1 lost time injury last year which involved finger amputation. It is noted that this company is part of a national organization with an excellent safety programme and extremely good employee benefits. Although it may not be applicable in this case, emphasis on accident reduction combined with generous health benefits may tempt employees to use sick leave instead of compensation for minor injuries. On the other hand, employees who injure themselves off the job would not be tempted to try for a compensation claim. Both factors could combine to result in only severe injuries showing up as compensation cases. This possibility is worthy of further study since failure to file a claim is detrimental if later complications arise.

In Manitoba the field men also conduct seminars on safety.

Of the 15 inspectors operating out of the Workmen's Compensation Board involved in education and enforcement, eleven operate out of the Winnipeg area, one operates from Brandon, one from The Pas, one inspects excavations and another inspects Federal works.

#### Safety Education

In addition to the work of the Compensation Board, there are accident



prevention associations including the Accident Prevention Association of Manitoba which operates on a minimal budget (about \$400 annually) and appears to be involved primarily in getting employers together at dinners to discuss mutual problems and become interested in general aspects of accident prevention work.

#### Federal Involvement Compared to Ontario

It is also noted that representatives of the Workmen's Compensation Board in their visits to Federal works do not provide their complete programme but are restricted to the enforcement of legislation. The officers of the Federal Department of Labour perform safety audits in the same premises. It is understandable that this situation might exist in Ontario where the Department of Labour is primarily an enforcement agency and the Federal works are not members of one of our nine accident prevention associations, but in Manitoba and other provinces where the provincial agency offers the complete service, it might be asked why there is need for the apparent duplication. In addition, it might appear that in Ontario a grain elevator which is classed as a Federal work and which belongs to one of the divisions of the Industrial Accident Prevention Association, might receive services of an Ontario Ministry of Labour inspector, a consultant from the I.A.P.A., and an officer of the Federal Department of Labour.

Due to the varying programmes across the country, it might be useful to look more closely at the interaction between the excellent programmes of the Federal Department of Labour and those of the provinces to determine the best mix and work towards this in each of the provinces.

#### Premises Visited and Observations

As in the case of other provinces visited, the premises surveyed in Manitoba did not include any with a worse accident record or greater hazards than the worst one visited in Ontario. It would appear again that we have further reinforcement that accident prevention and compliance with laws is primarily related to management's sincere interest in the question and that the role of government is to cultivate this interest through the judicious use of education, enforcement, research and investigation as appropriate in each situation and to ensure that valid accident prevention information is readily available.



MichiganOrganization and Administration

Although Michigan has been highly industrialized for many years and is the hub of the automotive industry, governmental safety programmes did not receive much attention until a task force instituted by Governor Romney in the middle of the 1960's resulted in changes in legislation which brought both education and enforcement of occupational safety programmes into the Department of Labor. Prior to this, the government was involved only in the enforcement aspect of the programme and this was minimal as compared to Ontario's involvement. Even now, the money allocated to the programme is a mere  $1\frac{1}{2}$  million dollars as compared to the more than 5 million Ontario spends on occupational safety education alone.

One similarity between Michigan and Ontario is that the enforcement programme is financed by tax revenue and the safety educational and training programme (S.E.T.) is financed by a levy on industry based on Workmen's Compensation payments. In Michigan, Workmen's Compensation is handled by private insurers, but the law provides for a percentage to be funnelled into the S.E.T. programme of the Department of Labor.

Further differences include the waiting period. In Ontario, the injured worker is compensated for his entire loss of time, whereas in Michigan, an employee who is injured does not receive compensation until the eighth day. If, however, he is off work two weeks or more, he receives compensation dating back to the first day of lost time. Some companies pay the employee for the first week. In such cases lost time of more than two weeks results in the employee being paid twice for the first week, once by his employer and once by the insurer.

In addition, private insurance policies held by some employees provide benefits regardless of whether time off is subject to compensation. This supplementary benefit is not restricted to Michigan but occurs everywhere. Its extent may vary due to such factors as the employee's

need to protect himself from loss of wages, cost of medical services and other matters not covered under plans provided by employer or by state or federal governments.

In visiting plants in Michigan, it was noted that similar hazards seemed to exist as in Ontario, and there were several instances where it was noted that great strides had been made since the state became involved in a co-ordinated programme of occupational safety education and enforcement.

Although Michigan has instituted a procedure whereby the enforcement officer does not visit premises where the company is co-operating with the S.E.T. officer, some of the problems associated with this have not been solved. An example is where an enforcement officer visits a company shortly after the educational officer has completed his programme and the enforcement officer issues directions for compliance with laws which are not directly related to their accident experience and in the opinions of management and the S.E.T. consultant are of lower priority for attention than matters that are causing high accident costs but are outside the scope of enforcement procedures and the detailed provisions of the legislation. To divert money from solving real problems towards matters of less urgency merely to satisfy a law may appear to management to be unwise and reduce the respect they had developed for the programme during contact with the S.E.T. consultant.

It was explained that steps are being taken to ensure that the educational and enforcement officers work more closely together. It is hoped that changes currently proposed will ensure that when the responsibility for visiting a company by a S.E.T. consultant is transferred back to enforcement officers, apparent conflict of purpose will no longer arise. Michigan has the advantage over many jurisdictions in being able to co-ordinate the educational and enforcement programmes under one agency making it easier to resolve conflicts such as the one aforementioned. In Ontario such conflicts tend to be shrugged off and explained as a basic difference in programmes and responsibilities.

Michigan, however, cannot avoid the issues. In their attempts to resolve some of the details, however, it becomes increasingly evident that co-ordination of a safety programme cannot be achieved merely by integrating the functions. Whether they are within a single agency or separate agency, the most important factor is whether all of the parties, from the politician down to the field man, recognize the respective roles of education and enforcement in accident prevention and appreciate the usefulness of each as well as finding ways to eliminate conflict.

This is no different than developing a safety programme in industry whereby management of the company must be fully behind the programme and people in the plant must recognize that the company safety officer is not an ogre to be feared, but someone who is there to help them solve their problems. Projecting this back to the provincial or state safety enforcement and education programme, it would appear that guidelines must be laid down for each agency and the field men must be conversant with the role and work of their counterparts.

In Michigan there is a differential in salaries between the S.E.T. officer (educational) and the enforcement officer. This seems to have resulted in a real or imaginary rivalry between the two groups which could be detrimental in some cases. A careful analysis of the role of each might result in several levels or categories of enforcement officers equivalent to that of educational officers and a selection of persons in the lower or higher levels to visit premises depending on their complexity. Specialized inspections such as boilers, elevators, and other complex machinery or processes would fall into the higher levels.

The foregoing is not a condemnation of Michigan's programme, but an indication that problems existing everywhere are forced into the open when programmes are combined in a single agency. It has the advantage of forcing a solution to problems which would otherwise remain hidden.

#### Safety Education

In talking with management representatives in Michigan industries, it

appears they were extremely happy with the S.E.T. programme which would indicate that, in that state at least, they are not concerned whether the safety education role lies with government or a separate agency. They do not, however, have the active involvement we have in such organizations as our Industrial Accident Prevention Association. Ontario's safety associations have proven that their system can engender active involvement. There is no way of knowing whether this involvement would degenerate or disappear if our safety associations were moved over to a government agency, but the success that has been achieved under our present system would make a switch to direct government control a risky and unnecessary gamble.

#### Premises Visited and Observations

It was noted that many employers, although in favour of the principle of the Occupational Safety and Health Act (O.S.H.A.), are dissatisfied with some of the early results including the adoption of a multitude of regulations based on consensus standards and the power of field officers to assess a fine for non-compliance with a rule.

One example which was quoted by a corporate safety officer was a \$15.00 fine for having aisle markers in a deteriorated condition even though they were still legible. A discussion of the need for repainting aisle markers drew our attention to another company we visited where an employee suffered a fractured spine and was off work for more than six months when she slipped on a freshly painted aisle marker which was clearly designated as being painted.

The foregoing comment is not intended to discredit O.S.H.A. or federal involvement in occupational safety, but to re-emphasize that safety is really a trade off between two or more hazards of varying probability and severity. It further emphasizes the need to train field personnel on the relative hazard potential of matters covered by statute or regulation and that in the early stages of any programme there will be problems which must be approached reasonably to prevent these aberrations from ruining it in its infancy.

It is hoped that some of these idiosyncrasies will be ironed out in the near future so the very excellent federal legislation will not fall into disrepute.

MinnesotaOrganization and Administration

Minnesota is a moderately industrialized state with an outlook which relies heavily on outdoor recreation with its wealth of lakes and rivers.

It is developing a programme to meet O.S.H.A. standards although it has a well-developed programme in existence. Compensation insurance is by private carriers which (along with the rating bureau) co-operate with the Department of Labor and Industry's accident prevention division on supplying information on injury experience and costs for insured employers. This is a voluntary arrangement which has been achieved without the need to provide for it in the law. This information is used as a basis for allocation of field personnel in assisting companies with a poor record to improve their position through the development of an appropriate safety programme.

Although the 26 field personnel (plus 5 trainees) concentrate on education and the consultative approach, they have enforcement powers which are used where necessary. This combination of education and enforcement responsibilities is similar to that existing in Manitoba.

There are no organizations similar to Ontario's nine Accident Prevention Associations, but some insurers inspect within the terms of their policies and some of the trade associations have safety committees to generate interest among their membership.

An Occupational Safety and Health Advisory Board consists of five representatives of labour, five management, and one from the general public. It reports to the Commissioner of Labor and has power to grant variances from the rules as well as recommending the adoption of rules which become law upon approval of the Commissioner of Labor.

Merit Rating

Incentives for employer co-operation include a comprehensive merit rating system whereby one employer was recently eligible for a rebate of \$100,000. Apparently an insurance ruling resulted in only a \$25,000 immediate rebate with the remainder spread over several years. Nonetheless, the incentive to reduce compensation costs is worthwhile.



Nova ScotiaOrganization and Administration

Nova Scotia is an example of a small province, less industrialized than Ontario. With a population of approximately 750,000, it is about 1/9 the size of Ontario.

With nearly 1,500 manufacturing plants and three inspectors assigned to this work, each would be responsible for about 500 premises which is not an excessive workload if compared to other jurisdictions. It should be noted, however, that Nova Scotia inspects only the manufacturing plants whereas Ontario includes other establishments such as service stations, warehouses, retail stores, and offices.

The Department of Labour's Industrial Safety Division has seventeen field staff of which four are Industrial Safety (three field staff and one supervisor), four Construction Safety and the remainder divided between the Boiler, Elevator and Engine Operators Branches. The Division has an annual budget of \$245,000 of which \$60,000 is spent on industrial safety inspections. The work of the Industrial Safety Inspectors is similar to those in Ontario except for the premises covered and inspection priorities. They concentrate primarily on the investigation of complaints and accidents.

The province also has an Executive Committee on Industrial Accident Prevention consisting of our employer representatives (one of whom is Chairman), two labour representatives, the Director of the Department of Labour's Industrial Safety Division, and a representative of the Workmen's Compensation Board. This body has some similarities to Ontario's Labour Safety Council but is closer to the day-to-day operations. In fact, it is an operational advisory body related to the safety role of the Workmen's Compensation Board and is appointed by the Board subject to approval of the Lieutenant Governor in Council.

There also exists a Consultant Committee on Industrial Safety appointed by the Minister of Labour under authority of section 20 of the Industrial Safety Act. This Committee advises the Minister on any matters related to

Industrial Safety within the Province of Nova Scotia. The Deputy Minister is Chairman of the Committee.

Both Committees have in common the same representatives of the Department of Labour and the Workmen's Compensation Board. These are persons with positions similar to Ontario's Director of Safety Education at the Compensation Board and the previously existing Executive Director of Safety and Technical Services in the Department of Labour.

The roles of the two advisory committees in Nova Scotia combined come close to the advisory role of Ontario's Labour Safety Council but do not appear to have as much scope in fields not directly controlled by the Department of Labour and Workmen's Compensation Board. Also, one committee is appointed under provisions of the Workmen's Compensation Act and the other under the Industrial Safety Act. In the case of the Consultative Committee on Industrial Safety, it is questionable whether it has any statutory right to inquire into matters such as Mines, Elevators, and Boilers as listed in section 2 of the Industrial Safety Act. The point being that such exemptions apply to the entire Act and must, therefore, be considered to apply to any committee established under said Act.

It would appear advisable to provide for such advisory committees in a broader statute as has been done in Ontario if the intended role of the committee is to extend beyond the terms of reference of "The Industrial Safety Act".

As in Ontario, there is no co-ordinated programme to ensure the most efficient use of field personnel of the enforcement and educational agencies. Examples were given where it was common for the two officials to co-incidentally visit the same places on successive days and the employer would become confused as to their respective roles, affiliation and authority. It was suggested that effective co-ordination could only be achieved if the two functions

reported to a single decision maker who could allocate roles and determine whether an educator or enforcement officer should be assigned a given task as is now done in Michigan under their Department of Labor.

Nova Scotia's Occupational Safety Administration is similar to Ontario but less complex (Figure 9).

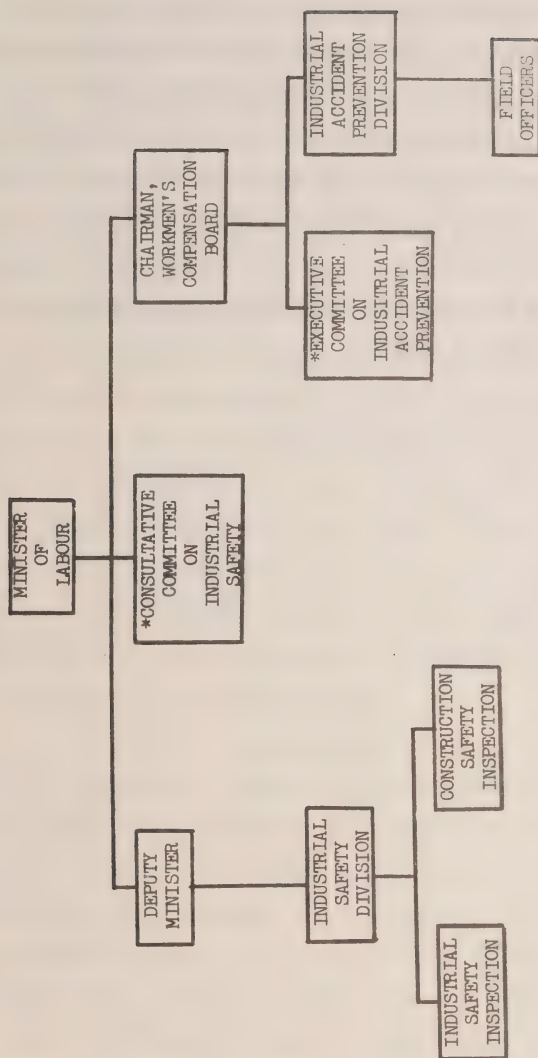
Nova Scotia uses both sides of the inspector's report form. The front contains pertinent data including a check list of questions ranging from housekeeping to machine guarding. Each must be checked off in the appropriate column, i.e. satisfactory, unsatisfactory or not applicable. In this way a quick glance at the reports indicates the type of problem requiring attention. The back of the form is reserved for directions necessary to comply with the legislation. The directions are on matters shown as unsatisfactory on the check list.

Although the Workmen's Compensation Board publishes a comprehensive report including many tables, the report has similar weaknesses to those of most other jurisdictions. The greatest weakness being its lack of relationship to the number of persons employed thereby making any comparison to previous years or other jurisdictions impossible. The Board does, however, use the S.I.C. code and it would not be difficult to integrate their accident records into a useful Canada-wide set of occupational injury statistics in co-operation with Statistics Canada (formerly the Dominion Bureau of Statistics).

#### Safety Education

The safety education role is performed by the Industrial Accident Prevention Division of the Workmen's Compensation Board which consists of a Director, a Supervisor and seven field officers. The role of this branch of the Workmen's Compensation Board appears to be similar to Ontario's Industrial Accident Prevention Association on a smaller scale. Although plant surveys, which can be mistaken for industrial safety inspections by some employers, have been abandoned by Ontario's I.A.P.A., such surveys are still undertaken by the educational group in Nova Scotia. The Workmen's Compensation Board spent \$134,000 on this Division's programme in 1970.

Figure 9



\*Note:- These Committees have common members from Department of Labour and Compensation Board.

Premises Visited and Observations

Field visits in Nova Scotia included an oil refinery, paper mill, canning factory, shipyard, and manufacture of paper fibre containers. As indicated on the summary (Figure 11), the injury rates were within the range noted in Ontario. There was no evidence to indicate that the injuries would have been prevented by more frequent government inspection. The shipyard was not included in the summary since it was many times larger than other premises included in the survey and time did not permit close scrutiny of the records. Nevertheless, there was no evidence to indicate that the results of Ontario's programme are significantly different than Nova Scotia's. The injury record and reduction of hazards in premises visited were as good as their counterparts in Ontario.



OhioOrganization and Administration

Ohio's Occupational Safety Programme appears on the surface to concentrate solely on education and consultation, ignoring enforcement completely. A deeper examination indicates that this first assumption is only partially true. The role of education and consultation on matters of occupational safety and health can best be compared to Ontario's Industrial Accident Prevention Association if they covered the total occupational safety field in Ontario.

Although conventional enforcement powers exist in Ohio's Department of Industrial Relations, it is understood that this means of enforcement has not resulted in any prosecutions for the past thirty years. Although the advent of the Occupational Safety and Health Act of the United States may fill this void, it must be recognized that the void may not be as large as advocates of enforcement have assumed. In fact, discussions with employers and state officials as well as visits to industrial establishments in the state leave a distinct impression that enforcement through prosecution may do more harm than good unless it is reserved for those employers who do not respond to the current programme.

Merit Rating

Ohio's educationally oriented programme effectively utilizes such tools as a merit rating system whereby the rate may be varied to an increase or decrease of 85% of the class rate calculated on the company's performance in a four year period commencing five years prior to the current year.

In addition to this, an employee may receive an increased compensation payment from 15% to 50% above his normal Workmen's Compensation benefit if it is shown that the injury, disease or death resulted because of the failure of the employer to comply with any specific requirement for the protection of the lives, health or safety of employees enacted by the Industrial Commission or in the form of an order adopted by the Industrial

Commission whose decision is final. Such increase is a direct charge to the employer and does not derive from the fund. An employee's appeal for such a hearing can be filed up to two years following the date of injury.

Ohio is one of the few states having Workmen's Compensation handled by a single agency. The increased payment for bad performance is not as severe a penalty as provided in Section 86(7) of Ontario's Workmen's Compensation Act.

#### Premises Visited and Observations

To illustrate the effectiveness of Ohio's programme, a die casting establishment which we visited employing 140 persons was the cleanest such operation I have visited. There were two lost time injuries in the past year. Neither of these would have resulted in lost time in many of the premises visited in other states and provinces.

Another industrial establishment visited had never been visited previously by a representative of the Division of Safety and Hygiene and points out the need for periodic visits to premises even though the lost time injury record is minimal. Thirty-eight persons were employed in a sprinklered warehouse in which we found potential hazards including the following: misplaced exit signs; unduly steep and awkward stairway; locked exit door; large mezzanine storage with no railing or toeboard, but having a plastic hose stretched along the floor near the edge creating a tripping hazard; and a pile of empty cardboard containers approximately 30 feet in diameter and 15 feet high which, if ignited, would likely create such rapid heat generation that all sprinklers in the building would open making the entire system ineffective.

It must be emphasized that the foregoing is not to criticize Ohio's programme, but to praise it. The state's programme recognizes that companies with potentially serious problems cannot all be located through concentration on those companies having a high lost time injury experience. Although Ohio puts most of its effort on the industries presenting high

compensation costs and those where severe injuries occur, an attempt is made to visit all other industrial establishments through a policy whereby the field officer devotes a percentage of his time to visiting as many premises as possible in the vicinity of those known to require his attention.

Another comparison to Ohio's programme might be Ontario's Electric Utilities Safety Association which achieves excellent results in areas where Ontario's occupational safety legislation does not apply.

Although conventional enforcement through the courts has not been used in Ohio, its programme is effective. It remains to be seen whether law enforcement which must come as a result of the Occupational Safety and Health Act (Federal) will nudge recalcitrant employers in the direction of the educational and consultative services provided.

QuebecOrganization and Administration

The programme in Quebec parallels that of Ontario except that there is no organization equivalent to the Labour Safety Council of Ontario. Until recently, industrial safety inspection relied on general requirements of the legislation and the inspectorate were not as well trained as would be desirable. Considerable strides have been made in the past two or three years towards adoption of more detailed regulations. Engineers have been added to the staff assigned the role of preparing these regulations. Drafts are sent to industry for comment and meetings are held prior to finalizing the requirements and submitting them to the Minister for processing.

At present the Technical Services Division of the Department of Labour employs a total of 400 inspectors out of which 120 are involved in the inspection of industrial establishments and public buildings. It should be noted that the Ontario Department of Labour's Industrial Safety Officers (by comparison) do not have public buildings such as apartments, hotels, etc., within their terms of reference.

Safety Education

Compared to Ontario's nine Accident Prevention Associations obtaining their authority under the Compensation Act, Quebec has four such associations, namely the Industrial Accident Prevention Association, the Pulp and Paper Safety Association, the Forest Industry's Safety Association, and the Sawmill Industry's Safety Association. Due to lack of time on this visit, no calls were made with representatives of these associations, but inquiries were made as to their role and position within the organization.

Our comments will relate only to Quebec I.A.P.A. since it is the counterpart of the industries visited. Apparently, Quebec I.A.P.A. obtains its authority and money through the Workmen's Compensation Board and the

staff is paid by the Board. They are in effect an arm of the Workmen's Compensation Board of Quebec. Until recently, they conducted surveys similar to the inspections made by the Department of Labour, but have now followed the pattern of the Ontario I.A.P.A. and are concentrating on the role of consultants to industry assisting in the development of safety programmes along with other purely educational roles and the dissemination of safety literature.

Of the five factories visited in Quebec, only two indicated an awareness of Quebec I.A.P.A.

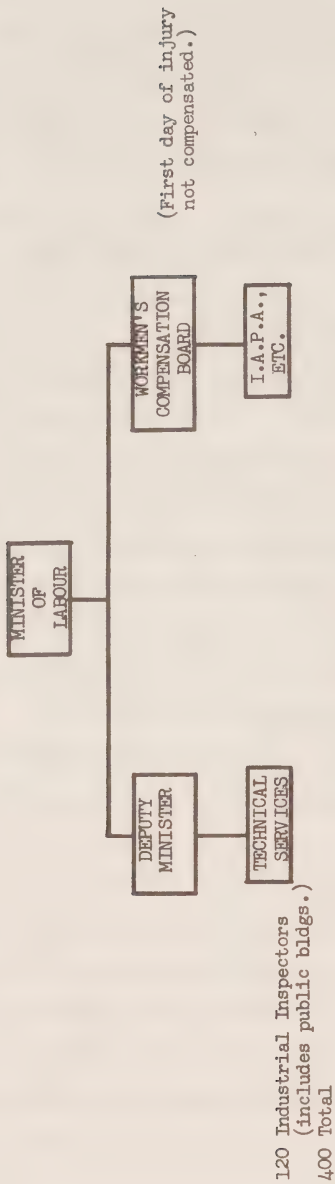
#### Premises Visited and Observations

Quebec provided further confirmation for observations in other provinces and states. Its unique bilingual situation helped accentuate some of the problems associated with achieving an effective company safety programme. It provided examples of where lack of communication between management and employees, accentuated by a language difference, resulted in lost time injuries out of proportion to the hazards present.

To emphasize this, the plant visited with the second highest lost time injury rate in our entire survey was one in which all equipment was fully guarded in such a way that we did not locate any matters which would be considered a contravention of Industrial Safety Legislation in Quebec or Ontario, but it was obvious that management and labour did not understand each other.

As for true hazards, I saw no plants as bad as the worst one I had visited in Ontario, whereas one locally owned and operated company which we visited had a true accident experience and safety programme which was as good as I have visited anywhere. It would again appear that the day-to-day accident record in a company is related more to factors within the company itself than to the external forces applied by governmental intervention.

Figure 10  
Occupational Safety Administration  
In Quebec





WisconsinOrganization and Administration

The State of Wisconsin which provides an interesting mixture of agriculture, manufacturing and recreational industries has always considered itself to be a leader in enlightened programmes benefiting its citizens. A prime reason for its inclusion in the survey was its great interest in the use of statistics as a tool in the accident prevention programme. Like all other states and provinces, a consultative approach to safety is preferred over complete concentration on law enforcement.

The Occupational Safety Programme is administered primarily by the Industrial Safety and Buildings Division of the Department of Industry, Labor and Human Relations. This Division is made up of the Bureau of General Inspections, the Bureau of Special Inspections, the Bureau of Plans, and the Bureau of Petroleum Inspections. This latter Bureau has recently been assigned to the Division and will likely be amalgamated with one of the other three Bureaus.

Examination of the responsibilities assigned to this Division indicates that it includes what Ontario has assigned to the Ministry of Labour, the functions recently transferred to the Ministry of Consumer and Commercial Relations, as well as safety in Mines and electrical installations in buildings. In addition to law enforcement, the Division conducts seminars and other functions which are considered educational. The following definitions taken from the Wisconsin Statutes help to indicate the wide coverage of their occupational safety legislation:

"Employment" shall mean and include any trade, occupation or process of manufacture, or any method of carrying on such trade, occupation or process of manufacture in which any person may be engaged, except in such private domestic service as does not involve the use of mechanical power and in farm labor as used in Subsection (1).

"Employee" shall mean and include every person who may be required or directed by an employer, in consideration of direct or indirect gain or profit, to engage in any employment, or to go or work or be at any time in any place of employment.

The Statistical Division of the Department provides the Industrial Safety and Buildings Division information taken from compensation reports and the reports of the inspectors in such breakdowns as are deemed to reflect the need for inspection or consulting services. All persons contacted appeared to recognize the advantages of co-operation between the different Divisions. An example of this is the existence of specialists in the Statistical Division including three psychologists who are working in co-operation with the Industrial Safety and Buildings Division in projects utilizing their expertise in developing safety programmes in specific industries and examining the results in an attempt to uncover factors which will be most effective in future programmes. Some of these projects are similar to services offered by our Industrial Accident Prevention Association and the Safety Director programme of states such as Ohio. The difference, however, is in using them as pilot studies for research purposes under the guidance of behavioural scientists. In addition, senior personnel of both Divisions are attending courses and working very closely with Dr. K. U. Smith of the Psychology Department of the University of Wisconsin in a sincere attempt to find ways to utilize the knowledge of behavioural scientists most effectively in Wisconsin's programme.

An interesting aspect of Wisconsin's programme is that the Workmen's Compensation Act gives claimants with compensable injuries increased indemnity and death benefits where the injury was caused by the failure of the employer to comply with any statute or any lawful order of the Department, and decreases a claimant's indemnity where the injury was caused by the failure of the employee to use safety devices which were provided in accordance with any statute or lawful order of the Department and adequately maintained, and

their use reasonably enforced by the employer, or where injury resulted from the employee's failure to obey any reasonable rule adopted by the employer for the safety of the employee and of which the employee had notice, or where the injury resulted from the intoxication of the employee.

If a violation is found and if the injury was caused by the violation in case of an unsafe condition, the employee's compensation is increased by 15% and charged directly against the employer. The employee's compensation is reduced by 15% for his violation or unsafe act. Reduction of compensation for failure to obey a reasonable rule adopted by the employer can be made only where a definite order or rule is shown and where the employer acquiesces in failure of the employee to use safety devices, or where the employer fails to make a reasonable effort to enforce safety rules.

It would be interesting to know what effect this policy has on a person's tendency to be absent from work as a result of an injury particularly since the majority of injuries are deemed to be the result of unsafe acts.

#### Premises Visited and Observations

In visiting industries in this state, I specifically requested to visit those which were considered to be average or below average. None of the premises selected presented hazards worse than what I have viewed as the average for similar industries in Ontario.

Appendix 3 - A Look at the Figures

A total of 70 industrial establishments were visited out of which 28 were in Ontario (Figure 11). The lost time injury rate of industries visited in Ontario varied from a low of zero to a high of 371. The average rate for premises visited in Ontario was 54 which is slightly higher than the 52.5 average for all premises visited.

In attempting to compare Ontario's total picture with the premises visited, the report of the Workmen's Compensation Board for the calendar year 1970 was used. This report showed 373,133 new claims in that year out of which 219,933 were for medical aid only. If we assume the difference accounts for lost time injuries, we have 153,200. The work force covered by this number of injuries is not listed, but other sources indicate that the total work force in the province is approximately 3 million.

Although it is unwise to combine figures from different sources, it would appear safe to assume that the work force covered by Workmen's Compensation would not exceed 3 million. The lost time injury frequency of 51 per 1,000 workers resulting from these figures is, therefore, likely to be lower than that which prevailed if the true figures were known. In the same year (1970) the records of the Ontario Department of Labour showed a lost time injury rate of 40 when prorated to a yearly figure. These covered only injuries subject to The Industrial Safety Act and the total figure may be considerably greater. The corresponding figure for 1972 was 37. If only manufacturing is considered, California's rate was 38 in 1970, but Ontario's was 52. We, therefore, have figures of 51, 52 and 54 for Ontario obtained from different sources. In addition, the average rate of 25 obtained for the five industries visited in California is only slightly lower than the 30.5 per 1,000 workers reported by that state for the year 1970.

The reported occupational fatality rate for California is no higher than that of Ontario. This, and the high percentage of California deaths not controllable under occupational safety legislation (Figure 12) raises the discouraging possibility that Ontario's true injury and fatality rate may be higher than California in spite of the increased expenditure on the problem in Ontario.

Perhaps the most significant figures in terms of requiring a reassessment of the role of enforcement are those emanating from the question, "Would a visit by an inspector the preceding week have resulted in action which would have prevented the injury?" Out of 884 lost time injuries surveyed, only 26 were considered to fall in this category.

It is further suggested that this figure may be high since the question was answered "yes" if any one of the people present felt there was a possibility that inspection could have prevented the injury. These people included a representative of management, myself, and a representative of the state who was in some cases an enforcement officer and in other cases an education officer.

The resulting percentage is only 2.9. Even more startling was that in the companies with the highest injury frequency, none were considered to be correctable by prior inspection. Where a high frequency is indicated, this cannot be used to condemn a state programme since the sample was small and the condition of the premises in most cases was acceptable. To reinforce this point, the premises having the highest lost time injury rate was in Ontario and none of the injuries were judged to be subject to correction by prior inspection.



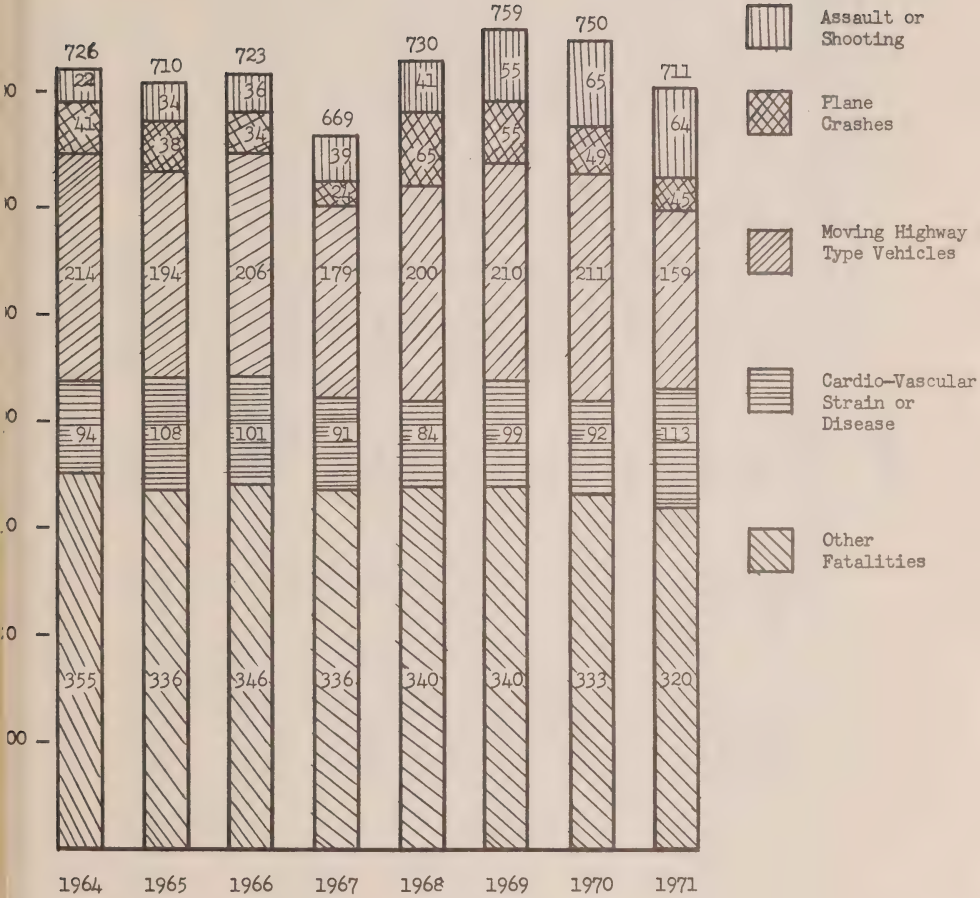
Figure 11

State (or Province)	Plant Reference Number	Number of Employees	Number of Lost Time Injuries	Possible Prevention by Thorough Government Inspection		Net Including Death - Days Lost In Year	Avg. Days Per Lost Time Injury	Lost Time Injury Rate (Per 1,000 Employees)
				Previous Week	After Accident			
Ontario Min. of Labour	1	82	7	0	0	206	29	85
	2	90	4	1	1	177	44	44
	3	650	16	0	1	946	59	25
	1	200	0	0	0	0	0	0
	2	95	8	0	0	245	31	84
	3	90	11	0	1	272	25	122
	4	93	5	0	0	52	10	54
	5	115	13	0	0	170	13	113
	6	75	5	0	0	135	27	67
	7	85	5	0	0	230(+)	46	59
I.A.P.A.	8	65	10	0	1	303	30	144
	9	70	26	0	6	120	5	371
	10	175	1	0	0	21	21	6
	11	145	4	0	1	26	6	28
	12	90	6*	0	1	74 *includes 1 death	12	67
	13	130	1	1	1	120	120	11
	14	55	6	0	0	191	32	109
	15	70	12	1	2	318	26	171
	16	50	0	0	0	0	0	0
	17	150	7	0	0	209	30	47
	18	87	11	0	1	52	5	126
	19	220	6	1	1	99	17	27
	20	300	17	0	0	700	41	57
	21	150	13	1	2	115	9	87
	22	100	0	0	0	0	0	0
	23	167	8	0	2	85	10	48

State (or Province)	Plant Reference Number	Number of Employees	Number of Lost Time Injuries	Possible Prevention by Thorough Government Inspection			Not Including Death - Days Lost In Year	Avg. Days Per Lost Time Injury	Lost Time Injury Rate (Per 1,000 Employees)
				Previous Week	After Accident				
Ontario I.A.P.A. (cont'd)	24	36	7	0	0		143	4 <sup>(3)</sup>	194
	25 (28)	75 (3,710)	12 (221)	1 (6)	5 (26)		47 (5,056)	4 (23)	160 (54)
Alberta	1	1,000	17	0	2		403	24	17
	2 (2)	170 (1,170)	2 (19)	0 (0)	0 (2)		109 (512)	54 (27)	12 (16)
Arizona	1	255	34	0	7		342	10	133
	2 (2)	290 (545)	36 (70)	0 (0)	4 (11)		204 (546)	6 (8)	122 (128)
British Columbia	1	230	17	2	2		312 (312)	18 (18)	74
	2 (2)	178 (408)	23 (40)	1 (3)	2 (4)		-	-	155 (98)
California	1	192	33	0	6		576	17	171
	2	1,500	29	0	0		667	23	19
	3	270	3	0	0		130	43	17
	4	325	27	0	0		800 (based on number of accidents as % of total)	30	83
	5 (5)	1,835 (4,122)	12 (104)	0 (0)	3 (9)		560 (2,723)	47 (26)	6 (Avg. 25)
Manitoba	1	700	43	1	1		(Not Available)	-	61
	2	500	41	0	4		220	5	82
	3	150	1	0	0		35	35	7
	4	140	6(+)	0	1		380	6 (excluding #1)	43(+)
	5 (5)	70 (1,560)	3 (94)	0 (1)	1 (7)		32 (667)	11 (13)	43 (60)

State (or Province)	Plant Reference Number	Number of Employees	Number of Lost Time Injuries	Possible Prevention by Thorough Government Inspection			Not Including Death - Days Lost in Year	Avg. Days Per Lost Time Injury	Lost Time Injury Rate (Per 1,000 Employees)
				Previous Week	After Accident	Accident			
Michigan	1	250	21	0	4	4	440	21	84
	2	125	17	2	4	4	171	10	136
	3	400	29*	1	3	3	787 *includes 1 death	27	72
	4	100	18	0	0	0	104	6	180
	5	170	6	1	1	1	68	11	35
	6	60	0	0	0	0	0	0	0
	7	250	16	2	5	5	136	8	64
	8	275	44	0	1	1	1,237	28	160
	9	200 (1,830)	15 (166)	1 (7)	3 (21)	3	510 (3,453)	34 (21)	75 (90)
Minnesota	1	150	10	0	3	3	123	12	67
	2	600	29	1	2	2	483	17	48
	3	135 (885)	2 (41)	0 (1)	0 (5)	0	8 (614)	4 (15)	15 (46)
Nova Scotia	1	113	5	0	1	1	202	40	44
	2	100	4	0	0	0	64	16	40
	3	300	2	0	0	0	18	9	7
	4	225 (738)	9 (20)	0 (0)	1 (2)	1	221 (505)	25 (25)	40 (27)
Ohio	1	142	2	0	1	1	77	38	14
	2	38	1	0	0	0	18	18	26
	3	280 (460)	7 (10)	2 (2)	3 (4)	3	49 (144)	7 (14)	25 (22)
Quebec	1	180	5	0	1	1	117	23	28
	2	42	15	0	0	0	132	8	347
	3	65	11	0	0	0	87	8	169
	4	300 (587)	25 (56)	0 (0)	0 (1)	0	203 (539)	8 (10)	83 (95)
Wisconsin	1	140	27	2	2	2	111	4	192
	2	364	22	1	2	2	321	14	63
	3	180 (684)	14 (63)	3 (6)	4 (8)	4	182 (614)	13 (9)	78 (92)
Totals	70	16,699	884	26 (2.9%)	100 (11.3%)	15,695	Average 18	Average 53	

Figure 12



WORK FATALITIES IN CALIFORNIA - 1964-1971

Figure 13

## Comparison of Workmen's Compensation Benefits

	Maximum Fatality "Avg. Man" - (No Maximum) \$82,524	Temporary Total Disability			Permanent Total Disability		
		Weekly Benefit	No. of Weeks	Total Benefit	Weekly Benefit	No. of Weeks	"Avg. Man" - Benefit
Arizona		\$152	433	\$66,000	\$150	Life	\$141,024
California	20,500	70	240	16,800	53	Life	82,253
New Mexico	22,500	45	500	22,500	45	500	22,500
Ohio	18,000	49	219	10,750	49	Life	81,026
Illinois	21,000	61	416	25,376	61	Life	87,339
Massachusetts	16,000	50	320	16,000	50	Life	96,512
Hawaii	35,100	75	333	25,000	75	Life	25,000
Michigan	83,824	63	500	31,500	63	Life	117,281
Montana	28,000	56	300	16,800	56	500	28,000
Alabama (lowest)	11,400	38	300	11,400	38	400	15,200
Ontario (1969)	(No Maximum)	100.97	No Limit	No Limit	100.97	Life	**
Ontario (1972)	(No Maximum)	129.81	No Limit	No Limit	129.81	Life	**

\* Average Man—age 40, wife age 38, 2 children ages 12 and 14, earns \$115 per week.

\*\*Average Man Benefit not calculated for Ontario since all variables used in calculations for States unknown.

Note:— This chart was supplied through the courtesy of the State Compensation Fund of Arizona.  
It has been amended to include figures from the Workmen's Compensation Board of Ontario.



Figure 14Disabling Injuries Per 1,000 Workers

Industry	Ontario		California		
	1970	1972	1968	1969	1970
1: Industries	51 40 (ISB)	Not Yet Available 37 (ISB)	31(30.9)	32(31.5)	30(30.5)
Manufacturing	52 "	48 "	37	39	38
Food & Beverage	<u>72</u> "	48 "	69	72	<u>70</u>
Rubber	<u>71</u> "	50 "	70	71	<u>67</u>
Leather	<u>51</u> "	41 "	38	40	<u>47</u>
Textile	42 "	44 "	46	56	63
Clothing	22 "	21 "	16	16	16
Wood	<u>89</u> "	78 "	101	98	<u>90</u>
Furniture & Fixtures	69 "	62 "	55	56	52
Paper & Allied Products	<u>39</u> "	34 "	41	42	<u>43</u>
Printing & Publishing	29 "	22 "	22	25	23
Primary Metal	<u>58</u> "	49 "	60	66	<u>57</u>
Metal Fabricating	87 "	73 "	58	60	62
Machinery	60 "	54 "	37	36	32
Transportation Equipment	78 "	55 "	23	26	26
Electrical Products	40 "	32 "	14	17	16
Chemicals	38 "	32 "	39	43	44
Misc. Manufacturing	50 "	43 "	39	44	40

Notes

1. The figures reproduced are the best that could be obtained, but are not statistically comparable.
2. The figures are rounded to the nearest whole number. The bracketed figures for California indicate the way in which we rounded decimals to the nearest whole number.
3. The value of 51 for all industries in Ontario (1970) uses lost time injuries from the Workmen's Compensation Board of Ontario and total work force from Statistics Canada.
4. The figures for all industries noted (ISB) are for all industries or parts thereof subject to the Ontario Industrial Safety Act for which figures were available.
5. All figures for Ontario, except as referred to in Note 3, are for the period April 1 to November 30 prorated to an annual basis by applying a factor of  $3/2$  to the number of injuries.
6. California figures are from "California Work Injuries", 1970 edition.
7. The underlined figures indicate those for 1970 where the difference between Ontario and California is shown to be 10% or less.

Appendix 4 - History and Comments

All living things follow a natural cycle of birth, growth, maturity and death. Safety programmes are no exception to this rule. If they are to reflect the needs of today, they must be modified as new knowledge becomes available, discarding the failures and strengthening the successes.

If we wanted a phrase to describe the worth of a safety programme in the light of the observations which resulted in this report, we could say:- "The potential for accidental injury does not relate as much to the actual level of hazard existing at any time or place as it does to the difference between the true hazard and what the observer believes it to be." This would lead to a policy for safety inspection as follows:- "The purpose of safety inspection is to help maintain an environment in which hazard is controlled to a level acceptable to society. This is achieved through locating deviations from the current norm and requiring correction of matters which are below some arbitrary minimum. As a result of this the norm gradually increases necessitating the raising of the minimum." In addition, the role of safety education is to help people understand the situation as it exists so they can operate safely within the environment.

Official attempts to reduce industrial injuries were given their first impetus by a "Factories Act" in Britain in the 1830's. Early efforts concentrated on enforcing "Machine Guarding" as the cure to industrial slaughter. This was appropriate at that time since it was machines which were exacting the greatest toll of death and suffering.

Seventy years later, as the Twentieth Century dawned, a new generation of "safety experts" entered the scene recognizing that machine guarding and law enforcement was not the panacea as first assumed. Guarding had solved many problems through engineering, but in spite of increasing attempts to enforce the rules, the decline in injuries was not as great as believed possible. People were still being careless. (Now we know that much of what we thought was carelessness was really a failure of the designers to use human engineering effectively.)

The new breed believed that education would solve the remaining problems. They added education to their repertoire but to discard enforcement was unthinkable. In this decision, they appear to have been correct, but they did not yet understand the role of human engineering. We are now in the 1970's and if we look around us, we can see a new generation of safety thinking which has been emerging over the past decade. When and by whom it was first conceived is hard to say since it is the offspring of not one but many progressive thinking individuals. Regardless of where it started, the new approach to safety can be summed up as a recognition of the "man-machine or man-environment interface". It ~~is~~ the replacement of the scatter-gun approach by a selective application of all of our resources, matching the tool to the task. For this we need a better understanding of all needs of man and what safety really is.

This report attempts to uncover some of the new ideas which show promise as well as to identify useful aspects of existing programmes. It attempts to select those which are most likely to improve the situation and to relate them to aspects of Ontario's existing programme which are incompatible with a truly effective and modern programme.

To examine the effectiveness of existing programmes from statistics was found to be frustrating and impossible. Lost time injuries were subject to so many variables that they had to be ignored. The first comparison to yield any results that showed a possible trend was a study of fatalities as related to the population of states and provinces which was conducted in 1967. Even though the reporting system did not permit accurate comparisons, it was generally conceded by all correspondents that California had an excellent reporting system, having equivalent accuracy to that in Ontario. This study included some states which appeared to have a better record than Ontario, but when subjected to closer scrutiny, the difference was less pronounced and sometimes reversed. California's recording system, however, seemed to be without obvious loopholes.

A rough comparison indicated the fatality rate per 100,000 workers in Ontario and California to be similar, but Ontario was spending twice as much on its official programme even though its population was seven million as compared to California's twenty-one million. On the surface, we had the embarrassing possibility that California was getting the same results with a per capita expenditure of only 1/6 of that which Ontario found necessary.

To compound the problem, the "motherhood is good" philosophy prevailing in the safety movement had resulted in no objective studies being done. It appeared time to look a little deeper and it was decided that the first step would be to visit a sampling of industrial establishments to see whether accidents occurring over the past year involved non-compliance with laws or rules (including procedures) or if unregulated factors prevailed.

Coincidentally with development of plans for the current study, John B. Cronin, a British lawyer, reported a similar study done by himself which led to a tentative hypothesis that their Factories Act was a failure. This seemed to be an overstatement of the situation, but it nevertheless reinforced the need for further study as a prelude to any changes in legislation or organization. In addition, the State of Wisconsin conducted a study of accident reports in the summer of 1971 which indicated that less than 25% of accidents were the result of matters which could be corrected by the established level of inspection and enforcement of occupational safety laws.

This further reinforced the need for our proposed study since our preliminary survey as reported in "Human Factors - Occupational Safety" had shown that reports filed with compensation boards did not always convey the true cause. Indeed, it can be demonstrated that most reports filed include only a superficial investigation of cause at best. Even if the report indicated machine involvement, there was no way of knowing whether the machine was adequately guarded and if so, whether the guard

was by-passed, was faulty or was removed for machine adjustment or repair. To get a more meaningful comparison, it was necessary to visit the site of the accidents and speak with the persons involved. Several things became evident early in the survey as explained on the following pages under appropriate headings.

ENFORCEMENT:- Of the lost time injuries that were studied, the number that could have been prevented by conventional government inspection was insignificant. In many cases of premises recently inspected by an enforcement officer, hazards existed for which no direction had been issued. Injuries which occurred were not found to be a result of those hazards. Even though directions by inspectors appeared to be on matters presenting potential hazards, injuries resulting from these hazards were rarely encountered. Where an injury occurred and directions were issued for compliance with the law, a human engineering examination of many of the resulting corrective actions indicated that the hazard was not eliminated and in some cases new hazards were created. This reinforced the validity of statements that no injuries had occurred and no directions had been issued relating to that hazard prior to the recently reported injury. This observed phenomenon may be the result of the fact that an injury is a statistical rarity in relation to the number of potential injury situations.

ENGINEERING:- In the interests of efficiency, the machines of today require less manual operation than those of the past and the engineering improvements have also resulted in the need for less maintenance, particularly when we consider aspects such as lubrication and adjustment which formerly resulted in injuries from performing these tasks while the machine was operating. Injuries examined in this survey which involved contact with moving machinery fell mainly in the category of physical contact during set up, adjustment, or special operation when the usually available safeguards are by-passed or removed. Another significant number involved reaching beyond guards which would normally fulfil inspection criteria.



It is not difficult to see that many guards for V-belts, gears and other such hazards are provided for efficiency and to prevent damage to the equipment. Fortunately, the likelihood of inadvertent contact is reduced, but this may be more incidental than planned. If engineering is to have a greater effect on accident prevention, it will need to take greater cognizance of the role of human engineering involving a multi-disciplinarian approach and particularly psychophysical phenomena such as a person's tendency to follow a previously learned pattern while under stress or when his mind is on something else.

EDUCATION:- Although education is an important component of accident prevention, the survey indicated that unless a person wants to be educated, there is little use in exposing him to this process. There were examples where management knew what they should do to prevent accidents, but the compensation cost (even though three times their class average), was not high enough to balance the expenditure necessary to reduce hazards and improve supervision. Underlying this was a low pay scale resulting in hiring what they referred to as "the bottom of the barrel" which was further accentuated by a compensation system which left some employees better off at the end of the year if they spent some time on compensation than if they worked full time.

It would appear that education, like enforcement, should be applied selectively and we should determine where education can most effectively be used. An initial assessment would indicate that education is effective for people who are interested in accident prevention and for non-interested persons if it comes close enough after an industrial injury that they can associate a likely gain in applying the safety practices.

A further problem is in our basic understanding of safety whereby we have felt that minor accidents, if completely eliminated, would eliminate all major accidents. A subjective analysis of the accident scene would indicate that the removal of one hazard results in the creation of another.

The severity and frequency may be changed and the location of the hazard may be different, but we cannot breathe a sigh of relief when the hazard is removed until we ensure that the net result is an improvement. For example, the removal of a tripping hazard may alter a person's expectation that such a hazard may be present, thereby increasing probability of injury when such a hazard occurs. Some hazard reductions may also alter a person's ability to cope with the remaining hazards. This may be an increase or decrease. It may also be associated with changes in the person's level of arousal and performance as associated with the remaining hazards.

A further problem in the recognition of real hazards is that both enforcement and education may have been concentrating too much on hazards which do not result in the majority of accidents and in some cases may be offering the wrong solutions. Our survey would tend to support such a hypothesis and indicate the need for a much closer re-assessment of not only our safety rules, but the principles upon which they are based. A more detailed analysis of the problem should provide information to ensure that our educational system can offer safety programmes and material which is factual and objective rather than the subjective analysis which has been so predominant in the past.

Inadequacy of fire extinguishers, exits, etc., are symptoms of a lack of understanding of safe practices. THE NUMBER OF INJURIES RESULTING FROM THE WEAKNESS MAY BE SMALL, BUT PERIODICALLY, EVENTS WILL OCCUR WHEREBY THE FAILURE TO MAINTAIN THESE SAFEGUARDS TURNS A MINOR EVENT INTO A CATASTROPHE. IF, AS A GOVERNMENT AGENCY RESPONSIBLE TO THE PUBLIC, WE DO NOT WATCH FOR THESE SYMPTOMS AND TAKE APPROPRIATE CORRECTIVE ACTION, WE HAVE FAILED IN OUR PRIME RESPONSIBILITY. That responsibility is to uncover problems which are not obvious to the employee or owner but which are known to the inspector through records and experience to present an unreasonable probability of injury or death to employees and other exposed persons. Fires, explosions and structural failures are prime examples of this category.

If we refer to the work of Dr. Hans Selye, the world renowned expert on stress, we see that removal of symptoms without attacking the true cause can break down defences and increase the damage. In the same way, concerted attempts to remove all causes of minor injuries without an understanding of the aforementioned problems can permit a potentially lethal situation to develop unnoticed unless an inspector or other suitably trained and experienced person visits the premises periodically. In such cases, accident statistics will not signal a warning in time to send an inspector. Periodic inspections on a random cycle and response to complaints are the only way of uncovering such situations which are not necessarily part and parcel of a total safety breakdown in a plant.

SOLUTION:- Use symptoms such as accident rates, observed hazards, complaints, and the presence of structural defects to indicate the possible presence of weakness in the safety programme.

Once a hazard is uncovered, it must be removed or otherwise controlled. Sometimes control is achieved through methods whereby the hazard signals its own presence, e.g. heat from a large steel ingot signals its presence before a worker gets within hazardous range. Its presence is known, but the most important factor is in making people realize the true nature of the hazard. You won't prepare to fight an aggressor unless you believe that he is an aggressor. Similarly, accident prevention plans such as fire drills will be taken lightly unless a real fire-trap can be visualized. If it can, there are usually better remedies than fire drills, e.g. ensure that exits are used in normal operation and are protected from the entry of smoke and fire.

If preventive maintenance cannot be kept up to date, attempts at safe operation become a choice between (a) selection of priorities, setting aside those things which cannot be done safely, or (b) slow systematic operation recognizing the presence of hazards and the fact that production must drop voluntarily. Failure to select one of these alternatives results in frustration and defeat.

The best solution may lie in telling the truth as to whether a hazard presents imminent danger to life and limb or if it is one which requires attention but may be acceptable for a short period if additional precautions are taken. Safety may really be a "social" problem. Our survey has certainly indicated that the number of injuries does not have as direct a correlation with the presence of hazards as previously assumed and that the number of days lost for similar injuries may be more related to morale, compensation benefits, and income tax rates than to the healing qualities of the individual.

Our existing programmes including our statistics do not provide the answers and we cannot go on much longer under the naive assumption that since safety is desirable, anything we do in the name of safety must also be good regardless of cost paid or benefit derived.

Appendix 5 - Development of Recommendations

1. Legislation:- Much has been said about this problem including recommendations emanating from each of the Minister's Safety Conferences in Ontario, but the salient points are worthy of further emphasis.

Consistency:- If safety legislation is to be respected and if the laws and regulations are to be considered a minimum below which no one must go, legislation must be consistent. There is no way this can be achieved when the safety acts and regulations in this province contain minimum requirements which vary from act to act.

Grouping of Common Problems:- If the requirements in each act and set of regulations are to be consistent, this involves changing all pieces of legislation every time a change is made. A more practicable solution appears to be the grouping of common problems into a single act and preferably into one area within that act. To have requirements for explosive activated tools in the Construction Safety Act, the Mining Act and the Industrial Safety Act, for example, not only leaves open the possibility of inconsistency but makes unnecessary work for everyone involved, including the Legislature. The most logical approach would appear to be to have a single Ontario Safety Act whereby regulations can be adopted for elevating devices, boilers, safety clothing and the many other subjects for which legal requirements are necessary regardless of where these problems exist. The current practice of setting standards for employees who are within an "industrial establishment" or other premises defined in a piece of legislation appears to be related more to the ease of recording and inspection than it is towards providing statutory requirements which can be enforced when necessary to ensure that an employee has a work place in which he has a reasonable chance of survival.

Contents:- This was covered in "Accident Prevention in Ontario, A Logical Analysis of What a Safety Programme Should Be" and is based on the principle that we live in a free country. If this is true, a person should be able



to do anything he wants as long as it does not infringe on the rights of others.

In a public building or in the industrial environment there can be problems over which the persons exposed have no control. The law must, therefore, provide assurance that the person who does have control will exercise his responsibility in providing an environment in which we are not likely to be unduly endangered whether it be a building which will fall on us, one in which we can be trapped by fire, or whether it has machinery which is unduly hazardous. For example, when exit doors are locked and a fire occurs, it may be too late to take remedial action to prevent occupants being trapped. Such hazards require special attention on the part of those who recognize the hazard and have some control over its removal.

Physical conditions of this nature can be the subject of a law, but there may be several solutions for each problem. An example is the person who must pass a test before he is permitted to drive a car. On successful completion, there are rules he must obey, but the law does not tell him what road to take or which law he must obey when faced with a choice between two conflicting ones. Similarly, throughout industry there are hazards for which a solution currently spelled out in the legislation is no better than a series of others.

It is impossible to set a standard that will suit all situations and all persons at all times. There are two ways to approach this problem. One is to leave all details and matters of possible dispute to advisory standards which are not enforceable by law. The second is to set what might be considered a social standard in the regulations which everyone is expected to live up to and then create a body separate from the enforcement agency whose responsibility would be to hear appeals and grant permission to utilize any solution which fulfills the intent of the original standard.

2. Public Involvement in Legislation Development:- The current survey has again confirmed that no law is effective unless it is one which is acceptable to those to whom it applies. Laws which a person does not believe in may be given lip service but will be ignored when the inspector is not present. Under this situation, there is a tendency to remove guards except when it is known that an inspector is in the vicinity. This can have a detrimental effect not only in encouraging disrespect for the law, but in developing dangerous habits.

As an example, an employee who utilizes a life line when he is being watched may begin to rely on it for support. If it is removed or fails, he is in a worse situation than if he had always acted as if the safeguard was unavailable.

To cite the Trench Excavators Protection Act as a law which effectively reduced injuries and deaths to persons in trenches or to cite the wide acceptance of hard hats in construction does not prove that safeguards can be achieved by legislation alone. In both cases, there were enough people who wanted to shore the trenches and wear the hard hats that the introduction of the rules became reinforcement for their own beliefs and permitted them to counter any argument of their peers.

Changes in acts and regulations require such time in preparation and processing that a few additional months to permit the views of people to be heard and adjustment made where necessary is well-warranted. Arguments that people will die if the law is not rushed through are unfounded. There are usually general requirements to cover the situation in the interval, and it is easy to point to examples of laws which have been existing for years and where premises which have been inspected many times still do not comply. Such examples include the lack of exits which could turn a fire into a catastrophic loss of life.

We cannot solve all problems, and no matter what is placed in the law, there will be people who do not know of the law, do not comply with it voluntarily or avoid complying even after being directed. Recognizing that this is a free country and the law should be the servant of man rather than its master, it is important that those to whom the law applies should have a say in its preparation. They should also be entitled to an explanation when their recommendations have not been acted upon.

This in no way interferes with the legislative process. On the contrary, it ensures that those who draft legislation have the opportunity to examine as many points of view as possible. There must be a cut-off date for the drafting of any legislation and its processing, but there must also be provision whereby everyone knows the procedure to implement a change in the rules if they have reason to believe such a change is necessary.

3. Adoption of Consensus Standards:- Consensus standards, if they are to be adopted as a law, would need to be rewritten having recognition of that which belongs in a law and that which should be a separate advisory standard.

Codes now existing under such agencies as the Canadian Standards Association contain what might be classed as a social standard for new materials and products. This is valid for newly acquired equipment and materials. The standards contain a safety factor recognizing the likely conditions to which the products will be exposed in use. Once the product passes into the hands of the individual, the product should live up to the expectations of those who wrote the standard, but there is no reason to believe that the same product tested a year later would or should perform as if it were new. In effect, a person with an old car, lawnmower or chainsaw does not expect the equipment to operate as well as if it were new.

There are some elements of the standards which may be valid as laws. These include requirements for relief valves to operate before the boiler blows up or that the interlocks on elevator doors always function, but there are many more that do not fit into this category.

4. Scheduling of Inspections:- Although we have had very dedicated and competent people working on the various phases of our accident prevention programme, the recent survey has again confirmed that these groups work with little or no knowledge of what is being done in the same plants by the other members of the team. It is necessary to utilize our resources more effectively and ensure that all members of the team are pulling together. To do this, we must determine the areas requiring attention. Development of an order of preference as a guide to scheduling is essential.

This was reinforced in an earlier survey (unpublished) which indicated that in 80 per cent of visits by an Industrial Safety Officer, no directions were issued. Our current survey indicated that companies having a high accident frequency are not necessarily ones in which an inspector deems it necessary to issue directions for non-compliance with legislation. There is also some evidence to indicate that potential hazards which have existed for considerable time are not always uncovered by either management, the Industrial Safety Officer or the Accident Prevention Representative. If the field officers are to spend as much time as possible examining real problems and minimize the time necessary to find them, action on complaints should be the most productive.

Suggestions that a lot of complaints are unjustified does not change the fact that the complainant believes there is a problem. If continual unjustified complaints are received from a given source, they can first be investigated by someone having different talents than the original investigator and if still found invalid, the complaints from this source can be relegated to a lower priority. Even then, they should never be ignored or shelved indefinitely.

The second item of priority is injury experience. Conventional safety thinking has assumed that a high frequency of reported accidents is an indication of lack of compliance with safety standards. This assumption has not been borne out in the recent survey. Any company with a high lost time injury frequency may be assumed to have a problem, but that problem may be completely

unrelated to its level of compliance with government imposed standards.

The problem centres around two things. The first is the company's policy relating to reporting of injuries. The second is the type of injury which can be corrected by reduction in the number and seriousness of unsafe conditions. An enforcement officer is most effective in issuing directions relating to dangerous conditions which can be corrected on a relatively permanent basis. Recognizing this, it is suggested that types of injuries be categorized and weighted to give a more accurate picture of the problems requiring attention. In such a procedure, a back strain would receive considerably lower weight than a finger amputation. This suggestion is different from the past practice of recording severity since we would not consider the number of days lost as the significant variable. We might also recognize that some injury categories are not necessarily the result of industrial exposure even though the symptoms first appear at the job site and are therefore legitimately classed as compensable. In such a procedure, all deaths and all amputations would require investigation whereas sprains, bruises and minor cuts, regardless of time off work, would be a lower priority inspection.

The third category of priority is non-injury accidents whereby roof failures, fires, explosions and other matters which could have caused injury are investigated to determine whether some action should be taken to prevent a recurrence (here or elsewhere) or if the accident is a symptom of other problems developing in the premises.

The last category is what might be called spot checks or audit whereby premises are visited at less frequent intervals even though no problems have arisen. Used effectively, it can be one of the most rewarding parts of a programme. Such inspections utilize knowledge from problems that have arisen elsewhere to locate potential dangers that would not otherwise be known to the owner, employer or employee. The most important hazards in this category are those which could cause serious consequences without sufficient warning for suitable corrective action to be taken.



5. Selection of Approach:- This has arisen as an important factor through evidence uncovered in the recent survey. If a company is fully committed to doing everything it can towards reducing accidents, it matters little whether the person visiting the premises is an enforcement officer or an education consultant. This company will do everything within its power to prevent accidents and will use the visits merely as an additional check on the work it is already doing.

An example of this was a company which attempted to correct every source of danger as soon as it came to their attention. Everything was done within their power to help ensure that all employees understood the hazards associated with their jobs. In addition, they provided a monthly inspection involving representatives of management and labour to find possible sources of trouble which had not been picked up by the employees and supervision. Although all reported items were important, most would not be noticed by someone unfamiliar with the premises. They did, however, appreciate the visits of enforcement officers and educators recognizing that they might see something which the company and its employees had missed.

At the other end of the scale, a company which is not interested in accident prevention or believes the situation cannot be improved may not be responsive to the educational approach and will utilize recommendations of the educator and enforcement officer to downgrade the programme of each. With this company, enforcement may be the only alternative, but this must be selective. In such premises, directions which can be contravened while making it look as if they are complied with, or directions which remove obvious hazards without attacking the less obvious ones, may do more harm than good. This situation can be particularly self-defeating when management believes that they have done all they can and have complied with every direction of the inspector. (See Figure 1)

Between the two extremes is the company that does not have a thorough safety programme but is receptive to any suggestion to improve the situation.

In this case, both the educational representative and the enforcement officer can be effective provided the enforcement officer utilizes a consultative approach reserving the big stick for the cases where there is no alternative. In the cases where enforcement is necessary, the issuance of directions and subsequent prosecution serves no lasting purpose in itself. Its only purpose is to drive the company towards seeking a solution to its problems or to set an example so others will know the law is being enforced. The availability of educators and consultants to assist the company in finding their solution must, therefore, be stressed at all times.

A constantly arising paradox is the lack of relationship between obvious hazards and injuries incurred. This was evident in companies where the housekeeping and hazards were so great that you would expect an accident rate much higher than that which existed. In other premises where there appeared to be no hazard, there were many lost time injuries. This raises the possibility that the removal of hazards known to the occupants, while not removing the ones less obvious to them, can reduce attention to the problem, thereby reducing or reversing the effect of the hazard reduction.

If this is true, hazard reduction must be approached with an awareness of the attitude of management, supervision and employees. If the company is not interested in accident prevention, effective action can only be taken on material items that are relatively permanent. This may require removal of potentially lethal hazards which are not likely to be obvious to the employee. The selection of this approach will depend on whether the employee will be injured in trying to avoid the obvious hazard, the ease of removing the obvious hazard and whether such removal will increase or decrease recognition of the less obvious one. Obvious hazards should never be ignored, but if they are to receive early attention, special consideration must be given to ensuring that all persons on the premises become aware of the remaining hazards and do not lower their guard.

6. Qualifications of Safety Officers:- This is a recommendation that has emanated from every Minister's Safety Conference and every discussion relating to the administration of safety legislation. Whether the officers be education or enforcement personnel, they cannot be accepted solely on the basis of experience in industry, nor can they be accepted solely on the basis of academic achievement. They must be hand-picked to have the type of inquiring mind to look beneath the surface to find the real answers and have an ability to recognize unusual situations even if there is no rule to cover them.

In most cases, a person coming from any source will not fulfil all the necessary qualifications of a safety officer. He must receive additional training both in the classroom and in the field. Consideration should, therefore, be given to creating several levels of inspectors and educational officers so they can take on more important tasks as their experience improves. Salaries to the fully qualified personnel must be at a level which will encourage them to make such work a lifetime career since their past experience on this type of job is more important than any academic training they can be given.

There are some problems which can best be solved by an educator and there are others requiring the talents of an enforcement officer. There are still others where both representatives should visit the premises together to pool their talents with management and labour to find the solution to a difficult problem.

An integrated computerized system for scheduling visits by field personnel can be utilized to ensure that an enforcement officer concentrates on problems in other premises when a company is co-operating with an educational officer in getting at the root of their problem. Similarly, the educator can be assigned problems in premises where the company is receptive to these ideas leaving the nonco-operative employer to the talents of the enforcement officer until he is ready to take advantage of the educator's talents.

7. Use of Consultants:- For many years we have given lip service to the talents of behavioural scientists in safety work, but have not yet involved them directly except for speech making and a few fringe projects. These persons have much to offer in the way of safety research, but in addition, they have a very real field application. Wisconsin is one state which is moving into this broader field and already has engaged three psychologists to work in the Industrial Safety Programme.

Discussions with field personnel in most jurisdictions visited indicate cases where companies are unco-operative or where, in spite of co-operation, they don't seem to be able to find the answers to problems. There are many excuses and what appear to be fairly valid reasons in each case, but they all boil down to the people problem. Although many of the problems can be solved by conventional approaches, there are always a few that do not respond. For these, it seems wasteful to continue permitting the large number of lost time injuries which occur without first utilizing the talents of behavioural scientists in an attempt to find a solution.

Direct involvement of such personnel in Ontario was recommended in a report to the Labour Safety Council by Dr. Earle S. Hannaford in 1968. Previous references to this need go as far back as Heinrich's classical book on "Industrial Accident Prevention". Since the current survey indicates that conventional inspection may have little effect on the total of lost time injuries, it would appear reasonable (if supplementary funds remain restricted) to divert some of the monies now allocated to conventional inspection into a pilot programme involving behavioural scientists. This programme could help determine the worth of such persons and could include a more detailed study of relative merits of education and enforcement on various types of industrial situations.

8. Need for Research:- Although the structure of a building or a guard for a machine can be designed utilizing conventional engineering principles, this in no way ensures that the guard will be used, that it will not create other problems or that the building will be livable. Studies done over the past

six years under the auspices of the Labour Safety Council have shown that some of the long-standing beliefs upon which our safety programme has been based are incomplete. These studies have necessitated the involvement of not only engineers but psychologists and physiologists. There are indications that greater use of psychologists and sociologists in such research are necessary to find the true answers and foundations upon which a useful safety programme can be based.

The current survey has indicated that the need to involve behavioural scientists is real. One indication of this is the number of situations where lost time injuries vary so greatly within premises of similar physical hazard. It is essential that we direct more of our resources towards finding the reason for such apparently unexplained phenomena.

9. Utilization of Inquest Findings:- The excellent inquiries into fatalities conducted at Coroner's inquests and the recommendations of private citizens on these juries are arrived at with considerable thought based on the evidence presented and the experience of the individuals concerned. Even though they may not be experts in the field, their recommendations are worthy of consideration, and they sometimes have insight into a problem not possessed by the experts. Under the situation prevailing at the time this report is being written and for several years previous to it, the Supervising Coroner's Office in Ontario has forwarded recommendations to agencies who appear to be involved with the problems. Only too often, they come back with a statement to the effect that the idea appears good, but "it is not under our jurisdiction".

It is recommended that every inquest verdict be examined to determine whether the recommendations are valid within current terms of reference of governmental departments or other agencies, and if not, whether the problem is sufficient to warrant further investigation to determine if some action should be taken which may include the enactment of new legislation, modification of existing legislation, the examination of matters related to the condition resulting from the fatality or research into that or related subjects.



10. Comparing Injury Statistics:- No classification system is perfect. For this reason alone, there is no advantage in using one which is different than that utilized by other agencies unless it can be shown that the benefits achieved thereby are greater than the difficulty created in comparing results to that of other groups.

The most commonly used classification system in Canada and the United States, and the one used by the Ontario Ministry of Labour and Statistics Canada, is the Standard Industrial Classification (S.I.C.). It would appear prudent to adopt a provincial system which can take effective advantage of material generated federally. This is necessary to use the statistics administratively as well as in research to uncover the true causes of accidents.

The amount of money spent in Ontario on industrial accident prevention education (over five million dollars of compensation funds annually), would indicate that a percentage of this should be allotted to examining our results against those achieved by other jurisdictions so we can improve our programmes. The current classification system used by the Workmen's Compensation Board of Ontario is not directly comparable to the S.I.C., and as such, it should be examined to determine whether it should be replaced or supplemented by the use of a system which permits comparison.

For anyone who wishes to believe that the expenditure of money is directly associated with reduction of accidents, a comparison of occupational fatalities per 100,000 workers between Ontario and other jurisdictions will indicate that such an assumption may not be valid. It is, therefore, imperative that we find some way to compare the results of the different types of programmes existing in different jurisdictions.

Regardless of the classification system used, the Workmen's Compensation Board is primarily interested in ensuring that an injured worker receives fair compensation as soon as possible and that each employer pays his fair share. The Ontario Ministry of Labour, however, is more interested in obtaining the kind of information which will permit the most efficient

employment of inspection personnel in its efforts to administer the occupational safety legislation. The Accident Prevention Associations are interested in the sort of information which will let them know which of their member firms are having the kind of problem in which their educational and promotional services are required. The Ministry of Consumer and Commercial Relations must know the incidence of possible failure of elevators, boilers, and other objects subject to their legislation if they are to schedule preventative inspections wisely. The Labour Safety Council is not only interested in the question of costs and effective utilization of inspectors' time, but in uncovering clues which will lead to worthwhile research which in turn will hopefully result in better programmes in the future.

In addition to utilizing a standard industrial classification which can be compared to other jurisdictions, it is therefore necessary to build into the system information which will provide each of the agencies with information necessary for them to know where to place their resources. As all injuries are reported to the Workmen's Compensation Board, it would appear reasonable that these reports should contain the appropriate information to service all agencies and that the Workmen's Compensation Board should be responsible (as previously indicated by the Minister of Labour) to record the appropriate information in the computer and provide such reports as are necessary to each of the agencies making up the total accident prevention team. Where information must come from different sources, in addition to that contained in the Compensation reports, the same coding system must be used (whether it is placed in the government computer or the Workmen's Compensation Board computer or some other data source) so the information from one can be blended with the other as required.



